COMPUTERWORLD

AT&T to cede more control over Unix V

BY JOHANNA AMBROSIO
CW STAFF

NEW YORK — Unix System Laboratories, Inc. will formally distance itself from its AT&T parent organization Wednesday, when AT&T is expected to announce that it is selling a minority stake of USL to at least 11 computer vendors.

A USL spokesman confirmed that the vendors, which will hold individual stakes that together add up to approximately 25% of USL, include Sun Microsystems, Inc.; Fujitsu America, Inc.; Novell, Inc.; Amdahl Corp.; and ICL, Inc. Employees of USL will own 10% of the organization, and AT&T will retain the remaining 65%. The equity offering is a private placement deal that was two years in the making.

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Spies linked to software scam

McFarlane implicated in scheme to distribute stolen Inslaw package

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — A small software firm's eight-year battle to prove the U.S. Department of Justice misappropriated its product broadened into a tale of foreign intrigue last week. Legal filings in the dispute paint a picture of conspiracy and corruption in a tangled web involving current and past officials of the federal government and foreign intelligence agencies.

A former Israeli intelligence officer alleged in a sworn statement that former national security adviser Robert C. McFarlane gave the Israeli government case-tracking software that had allegedly been stolen from U.S. software developer Inslaw, Inc.

The affidavits, filed in the U.S. Bankruptcy Court here, are the latest salvo in the long-running struggle by tiny Inslaw to

regain control of its law enforcement tracking software, which it claims was stolen by officials of the Justice Department and their friends for use in a complex set of business arrange-

> Software firm's dispute with Justice Department takes a new turn with allegations that former intelligence official Robert McFarlane 'sold' product to Israeli government

ments [CW, Jan. 1, 1990].

The former Israeli agent, Ari Ben-Menashe, told *Computerworld* that McFarlane gave the software to the Israel Defense Force's Signals Intelligence Unit

in 1982 for use in penetrating the computers of foreign intelligence agencies that were using the same case-tracking software.

Ben-Menashe said Israel succeeded in doing that in one case, but he declined to name the country. McFarlane was deputy director of the National Security Council at the time and later served as national security adviser to former President Reagan.

"It is false in every respect," McFarlane said of the allegations made by Ben-Menashe. He said he had never given or sold software of any kind to anyone.

In 1982, the Justice Department signed a $10 million contract with Inslaw for the right to use the Promis case-tracking software at 42 U.S. attorney's offices. In 1983, the department stopped paying Inslaw, and the firm ended up in

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Rival data, voice nets to hook up

BY ELISABETH HORWITT
CW STAFF

NEW YORK — Godzilla shook hands with Mothra last week as IBM and AT&T announced plans to integrate their respective network management platforms to provide users with a "single view of voice and data operations," according to Bill Warner, IBM's director of network management.

Warner and AT&T Director of Network Management Bill Gilbert said their companies have been pushed into the agreement by large corporate customers that want to coordinate NetView's management of IBM's logical Systems Network Architecture networks with Accumaster's management of AT&T and third-party physical network products and services.

Under the agreement with AT&T, IBM will develop software that will be the first time allow Netview to step outside its traditional role as focal point for enterprise network management.

A Netview host will be able to act as an "element manager" that feeds network data into another vendor's system, Warner

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NCR softens resistance to buyout

BY MICHAEL FITZGERALD
CW STAFF

DAYTON, Ohio — Surrounding NCR Corp.'s world headquarters building is the Old River Lagoon, which NCR employees affectionately call "The Moat." Last week, NCR gave strong signs that it may soon lower its drawbridge to suitor AT&T and allow itself to be acquired.

A long-anticipated shareholders' vote was held Thursday on takeover-related motions by AT&T, but the tally will not be final until sometime between April 7 and April 11.

Sources close to NCR said late Thursday that they expect

AT&T will not come close to the 80% vote needed to remove the entire board, but it will get more than 60% of the vote in a successful bid to replace the four NCR board members up for reelection, including Chairman and Chief Executive Officer Charles E. Exley and President Gilbert Williamson.

Sources close to AT&T confirmed these numbers but pointed out that the final tally could change.

The vote count may not matter, though, as a deal could be completed beforehand, thanks to NCR's recent move from the $125 per share it had steadfastly said should be a starting point for

Dayton showdown

- ► NCR lowers asking price to $110 per share.
- ► AT&T fails to get enough votes to oust NCR board.
- ► NCR directors, including Exley, will likely be voted on.

The first signs came last Monday, when Exley and AT&T Chairman Robert Allen met for five hours Wednesday. AT&T's investment advisers told AT&T

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Novell application manager shown behind closed doors

BY JIM NASH
CW STAFF

SALT LAKE CITY — Novell, Inc. demonstrated a new object-oriented software management application to developers and consultants here last week, according to several sources who saw the presentation.

Novell company documents obtained by *Computerworld* indicate the as-yet-unnamed product will use what is called a "management services protocol" to monitor, diagnose and control disparate applications running on Netware. Attendees briefed here were told it will formally announce the product in

about 60 days. Novell refused to confirm or deny whether it demonstrated the product.

Network managers who had not seen the product said they are worried that Novell may muddy the water with another management protocol.

Although several companies are rumored to be working on similar products for personal computer networks, none have been announced to date, according to industry consultants.

The Provo, Utah-based networking diagnose currently sells software to manage its record manager, Btrieve, and its SQL engine, Netware SQL.

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INSIDE

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Oracle debt not so good as DBMS vendor sets aside $42 million to cover duplicate billing and data processing errors. Page 99.

Johnson Wax CIO dusts off his resume; department reports to CEO until replacement is found. Page 4.

Integration Strategies The payoffs, pathways and pitfalls of linking LANs. Page 67.

NEWSPAPER

The 5th Wave

"CALL ME CRAZY, BUT I'VE GOT A HUNCH THIS VIRUS WAS GENERATED INTERNALLY."

HP/Apollo leaps RISC market

Low price, high performance to put HP ahead in RISC power arena

BY SALLY CUSACK
CW STAFF

NEW YORK — Hewlett-Packard Co. outdistanced the competition last week by rolling out a family of high-performance reduced instruction set computing (RISC) workstations that undercuts rivals by an average of $5,000.

In the first major announcement since the HP/Apollo Computer merger two years ago, the new HP/Apollo 9000 Series 700 hit ground with a base price of $11,990 for a $57 million instruction per second (MIPS), 55-MHz, entry-level, diskless 720 system. The base machine, which includes 16M bytes of memory and a 19-in. monochrome monitor, rates a $5.5-Spectmark performance.

Other members of the series include the Model 730 and the Model 750, 76-MIPS machines priced from $19,990 and $43,190, respectively. Both systems offer 72.2-Specmark and 66-MHz performance.

According to George Weiss, an analyst at Gartner Group, Inc.,

in Stamford, Conn., the state-of-the-art systems give HP a 12- to 15-month lead in price/performance for the proprietary RISC supplier market.

Vicki Brown, an analyst at International Data Corp., a Framingham, Mass.-based market research firm, noted that HP's

Billions at stake
HP hopes to increase market share in the packed battle over workstation sales

Percent of worldwide market share by value of shipments in 1990

Sun	$2,428	33%
HP	$1,520	21%
DEC	$1,212	16%
Intergraph	$565	7%
IBM	$476	6%
Silicon Graphics	$435	6%
Sony*	$194	3%
Next	$73	1%
Other	$529	7%
Total	**$7,390**	

*Sony figures reflect both Sony Corp. (Japan) and Sony Microsystems Co. (U.S.)
Source: International Data Corp.
CW Chart: Marie Warren

newly announced flexible lease terms will provide an easy migration path to the 700 platforms. "It has the potential to get HP into accounts that IBM, Digital Equipment Corp. and Sun Microsystems, Inc. can't reach," Brown said.

According to Ken Goldner, HP/Apollo's director of sales programs, the leasing program was designed for customers who want a RISC solution but are not quite ready to migrate for a variety of reasons.

"This includes customers with a large investment in the existing Motorola, Inc. 68000-based HP 400 series," Goldner said.

Former Apollo workstation users, such as SAS Institute, Inc. and Gerber Systems Technology, Inc., expressed confidence in the 700 as a logical migration platform to the Unix workstation environment.

I. Larry Diamond, director of desktop systems at Schlumberger Technologies in Ann Arbor, Mich., said the company committed to the 700 platform because it supported its four months against products from DEC, Sun and Apple Computer, Inc.

This is Schlumberger's first purchase of HP technology, and

the company will use the machines primarily for mechanical design applications.

Each 700 series system offers four different graphics options, and each can be configured as either a workstation or a server in standard Ethernet, Network Computing System and Transmission Control Protocol/Internet Protocol communications environments. All systems run HP-UX, HP's implementation of Unix.

The products provide both integer and floating-point performance capabilities and can operate in both the commercial and engineering marketplace, the vendor said.

More than 180 independent software vendors have announced their support for the Series 700. Among them is Cary, N.C.-based SAS, which has also signed a $15 million, three-year contract with HP to use the the systems for SAS internal development.

According to HP, the Open Software Foundation's OSF/1 operating system will be available on the 700 series later this year, and the announcement will include support for the Apollo token-ring network.

HP is also ironing out the details in a trade-up program to be officially announced on April 15. The program will allow up to $4,500 credit toward a 700 system from trade-ins on older systems from HP, DEC, Sun and IBM.

AT&T
FROM PAGE 1

Under the terms of the agreement, the 11 or 12 investors will name three USL board members and AT&T/USL will name six. Nevertheless, AT&T will not have control because a so-called "supermajority" of 70% will be needed to approve any major changes in the USL charter. If the outside directors vote together, they will be able to effectively block any AT&T/USL-led initiatives.

Eventually, AT&T will likely become the minority shareholder of USL, observers said.

Observers said the move is expected to help allay industry concerns that USL, the entity responsible for developing, enhancing and licensing the Unix System V operating system and other Unix-related software, is too closely controlled by AT&T's computer systems group, which competes with USL's computer-vendor customers.

Closer ties with the OSF
In fact, observers added, the arm's length relationship between USL and AT&T might even lay the groundwork for a closer alliance between USL and the Open Software Foundation, a Cambridge, Mass.-based consortium that licenses a competing operating system called OSF/1. One long-term benefit to users may be an increased affini-

ty between the two operating systems.

However, even if that does not occur, industry watchers said users will benefit in the short term by USL becoming more market-driven. "It will improve the overall quality of Unix and give users another choice," said Paul Cubbage, associate director of the Unix Systems Software Service at Dataquest, Inc. in San Jose, Calif. "And because USL will produce Unix implementations for specific chip sets, that will lower the cost of systems software for OEMs. That will ultimately be passed along to users."

The move "focuses all of USL's energy to develop Unix systems software, object-oriented tools and the desktop," said Judith Hurwitz, vice president of the Seybold Office Computing Group in Boston. "The implementation goes beyond the operating system." She said the international flavor of the investors "provides different perspectives of different users' needs."

Still, there will be challenges. "USL is not yet generating a positive cash flow, so who knows how many times it will have to go back to its investors?" said John Logan, vice president of the Aberdeen Group in Boston.

Further, Logan added, USL's technically oriented management might have a difficult transition to being able to guide a company that must make money on its own.

Johnson Wax CIO resigns

BY ELLIS BOOKER
CW STAFF

RACINE, Wis. — S.C. Johnson & Son, Inc.'s acclaimed information systems department saw the resignations of both its chief information officer and its director of IS management support services last month, *Computerworld* has learned.

Vice President and CIO Laurance Burden, who ran the 400-person, $70 million IS group, quietly resigned his post March 14; Randy Lengvel, services director, cleared out his desk last Wednesday.

Burden, who came to Johnson Wax in October 1988 from Firestone Tire & Rubber, Inc., said last week from his home that he had resigned for personal reasons and that the split was amicable. He said he was exploring several job alternatives.

Burden said he was proud of having been associated with Johnson Wax, which he called an outstanding company. He would not speculate on who might be

his successor.

He has been a highly visible CIO, currently serving as president of the Society for Information Management.

A Johnson Wax spokesman confirmed that no successor for Burden has been named and that until a new CIO is found, the department will report to company President and Chief Executive Officer Richard M. Carpenter.

Lengvel could not be reached for comment, however, the company spokesman confirmed that Lengvel's department had been divided two weeks ago between William Vitek, senior IS director of policy and planning, and Richard Haun, vice president of IS technology services.

The impact of the management shifts on Johnson Wax's bold Profitcore project, a "skills database" to match workers with work, could not be determined. Burden spearheaded Profitcore, which won the Association for Computer Training and Support's Assist Award for quality in a training system last October.

NEWS SHORTS

FBI claims break in parts thefts

A nationwide computer parts theft and fencing ring that has committed nearly 100 burglaries in the Silicon Valley has been uncovered by the Federal Bureau of Investigation and police in Fremont, Calif. A 20-year-old man has reportedly admitted to stealing more than $10 million worth of chips, motherboards, personal computers and laser printers from computer firms throughout the San Francisco Bay area. A Fremont police spokesman said the man, who has not yet been charged, admitted burglarizing dozens of computer companies during the past six months and has been tied to thefts in Arizona, Texas, Florida, New Hampshire, Massachusetts and Illinois.

Copyrights for databases in doubt

The U.S. Supreme Court ruled last week that the alphabetical listings in a telephone directory lack the "creative grasp" required for copyright protection. The ruling in *Feist Publications, Inc. v. Rural Telephone Service Co.* is bad news for the computerized information services industry because it raises doubts about whether any database of factual information is protected by copyright, said Boston attorney Peter Marx.

Intergraph adds image workstation

Intergraph Corp. announced a high-performance image processing workstation last week. According to the company, the Imagestation 6187 incorporates an integrated, parallel architecture that permits simultaneous viewing and manipulation of vector and raster data on a single screen. Targeted at geographic information systems applications, the system features 24-bit color and 8-bit overlay display capabilities and is priced from $107,000. Shipments are scheduled to begin this month.

Mips to introduce systems

Mips Computer Systems, Inc. is scheduled to introduce a pair of servers and a workstation tomorrow, filling out the lower portion of its product line. The systems, based on Mips' 33-MHz R3000A processor, are priced from $10,990 for the Magnum 3000/33 workstation, $11,990 for the RC3330 server and $36,500 for the RC3350 server.

Mellon's ISDN plans refreshed

Mellon Bank, a user of Bell Atlantic Corp.'s Integrated Services Digital Network (ISDN) offering, is back on track with plans for a major implementation of the digital data/voice links, after putting ISDN on hold earlier this year. Mellon Vice President of Data/Voice Networking Patricia Graham said the bank was eager to implement several competitive ISDN applications but had become discouraged when Bell Atlantic refused to quote prices and could not deliver ISDN lines for six months. Graham said Bell Atlantic told him that it will tariff ISDN this year and that it will be able to meet Mellon's initial needs for "a substantial number of ISDN lines" is Pittsburgh next year.

VAX software suppliers merge

Raxco Software, Inc. and Clyde Digital, two private software companies serving the Digital Equipment Corp. market, announced their merger last week. Renamed Raxco, Inc., the combined firms claim to be the largest independent systems software supplier in the DEC market, with 30 products and more than 10,000 customers worldwide. Raxco provides performance enhancement, automated operations and resource management software for VAX/VMS machines, while Clyde Digital supplies security and user support applications.

IBM outsourcing rivals convene

Representatives from eight outsourcing vendors met in Dallas last week to discuss one firm's contention that IBM's presence in the outsourcing business violates the 1956 Consent Decree. The vendor group, led by Affiliated Computer Services President Darwin Deason, will use this month to formally complain to the U.S. Department of Justice.

Feds to break reservation lock

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Department of Transportation (DOT) proposed regulations last week to break the airlines' near-monopoly control over the way travel agents can use, enhance or replace their computerized reservations systems.

The proposal would ensure that travel agents can use personal computers to access multiple airline databases and buy third-party hardware and software to enhance the systems provided by the four systems vendors.

The airline-owned vendors that supply the reservations systems from our discourage or prevent those activities, according to the DOT.

Travel agents said they would welcome the flexibility, but American Airlines opposed the changes as an unnecessary and intrusive regulation of its Sabre system.

Max D. Hopper, American Airlines' senior vice president of information systems, and other company officials said the proposal ignores the airline's right to recoup a $1.3 billion investment in providing travel agents with the Sabre information service, terminals and enhancements.

Freedom of information

Travel agents subscribing to Sabre, for example, do not get timely or reliable information about United Airlines' flights, said Paul M. Ruden, senior vice president at the American Society of Travel Agents in Alexandria, Va. They would like to be able to use their PCs to switch to

United's Apollo system for the best information on United's flights, he said.

Ruden added that the use of computers in travel agencies "will change significantly if the third-party computer hardware and software vendors jump into that niche . . . that was substantially closed until now."

A third major feature of the proposal is an effort to break the restrictive contracts that vendors use to prevent travel agencies from switching to competing reservations systems. It would reduce the maximum contract term from five years to three, eliminate rollover and minimum usage clauses and prohibit the tying of ticket commissions to the choice of a reservations system.

The DOT said its proposal will extend and strengthen the existing regulations governing airline reservations systems to curb the anticompetitive behav-

ior of the vendors, which the DOT asserts are exploiting their dual role as airlines and systems vendors to increase bookings and charge inflated booking fees.

Each of the reservations systems has an "architectural bias," the DOT said, because it is easier for travel agents to book the vendor's flights than it is to book flights on other airlines.

The DOT said it is seeking comments on whether to require

vendors to separate their commercial reservations systems from their internal airline systems so they would not have any technical advantages over other airlines.

Some members of Congress have called for stronger action — namely, full divestiture of the reservations systems — but the DOT action will "take a lot of steam out of the legislative proposals," said Raymond Neidl, an airline analyst at Dillon, Read & Co. in New York.

Midway Airlines takes nosedive to bankruptcy

BY ELLIS BOOKER
CW STAFF

CHICAGO — Midway Airlines filed for Chapter 11 bankruptcy reorganization last week, hoping to end months of hard times caused by the combined effects of recession, high oil prices and an industrywide downturn in air travel in the aftermath of Iraq's invasion of Kuwait last August.

Like the rest of the company, Midway's information systems department had felt the squeeze. Since August, six of the department's 14 support and development staff members have either been laid off or have resigned without being replaced, according to Paul Tate, vice president

of IS at the 11-year-old carrier.

Nevertheless, Tate was optimistic last week that a $40 million secured line of credit through Continental Bank N.A., announced along with the Chapter 11 filing, could fund some IS projects that had been shelved during the last eight months.

Midway expects an additional $20 million on May 1, when it receives the balance of the $64.5 million US Air paid last year for Midway's Philadelphia hub.

Back on the fire

IS projects that have returned to the front burner include the evaluation of additional fault redundancy for the airline's voice and data network and its data and

reservations centers as well as enhancements to its existing large systems, including those supporting airplane maintenance and airline engineering.

In past years, Tate had waged an uphill battle with management for funding [CW, June 11, 1990]. It was a miracle he did not abandon during the recent hard times.

"I continued to poke away on the importance of IS," Tate said. One of his short-term goals, he added, is to develop an "applications development methodology" for Midway, followed by the selection of fourth-generation languages or computer-aided software engineering tools.

This development environment — Tate is eyeing a distributed approach — will work with the IBM 390 Model 150 mainframe Midway installed two months ago to augment its IBM Application System/400s and its two IBM System/36s.

Apple offerings link Mac to database servers

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Beefing up its efforts to connect with information systems managers, Apple Computer, Inc. announced a series of client/server products last week designed to link Macintosh client workstations with large-scale database servers.

The new products, based on Apple's Data Access Language (DAL) — formerly known as CL/1 — will allow Macintoshes to engage in more cooperative processing with IBM mainframes and computers made by Tandem Computers, Inc., Digital Equipment Corp., Data General Corp. and Hewlett-Packard Co. and with dedicated data servers made by Teradata Corp. The support for IBM's VTAM networking facility running under MVS will be available in July, but other versions may not be available for months after that, Apple said.

DAL, an extended version of ANSI-standard SQL, enables interactive data access to multiple database servers. Part of the DAL software resides on the client while the rest resides on the server. Most Macintosh-to-host access in the past has been through terminal emulation.

Industry analysts were skeptical about the impact of Apple's DAL ports.

Richard Finkelstein, president of Performance Computing, Inc. in Chicago, said it would be hard for him to make a "business case" for recommending Macintoshes for client/server systems.

"The Mac [operating system] is a very closed, confined environment," Finkelstein said.

Others said the moves are a way for Apple to keep pace with client/server advances involving the IBM Personal Computer. "This brings Macintoshes to an equal or better level for transparent client application access to most of the widely installed SQL databases," said Aaron Zornes, an analyst at Meta Group, Inc. in

RDBMS tools highlight show

SAN FRANCISCO — A variety of relational database management system-related products were introduced at the DB/Expo '91 show, including the following:

• On-Line Software International, Inc. in Fort Lee, N.J., announced the ProDBA tool for database administrators, which is priced from $20,000 to $40,000. The tool helps programmers manage the database catalog for IBM's DB2 and automates deletion and creation of DB2 tables.

• Hewlett-Packard Co. said it will license Gupta Technologies, Inc.'s SQLWindows user interface, designed for use on client Microsoft Corp. Windows 3.0 machines and HP's own Allbase/SQL DBMS on HP 3000 and HP 9000 computers.

• Microsoft announced a new gateway to IBM mainframes. Built by Micro Decisionware, Inc. in Boulder, Colo., the software extends the reach of Windows and OS/2 client machines to IBM's nonrelational IMS database and to standard IBM VSAM files.

Westport, Conn.

Users at one of the largest Macintosh sites are very interested in DAL, Seafirst Bank, which has been using Macintoshes since 1985, has 3,800 Macintoshes installed, even though its production machine is an IBM 3090 Model 600.

"We envision having a fairly substantial amount of data available to client/server systems and having the applications that manage that data resident on the Mac rather than on the database server or host," said Bob Bowman, a Seafirst vice president and manager of PC support.

Seafirst has been using DAL code in pilot versions of client/server systems running against the IBM mainframe's DB2 relational database management system but has yet to put them into production.

A step toward IS managers

News of the Macintosh client/server products came at the start of an Apple campaign to gain greater access to IS managers, who have often regarded Macintoshes as nonstrategic systems.

Apple also said Oracle Corp. and the Ingres Products Division of Ask Computer Systems, Inc. have written software that allows a Macintosh to become a relational database server. Macintoshes

would use DAL to access remote Ingres and Oracle relational database management systems across a corporate network.

Apple will provide support for IBM mainframes running MVS with VTAM and the CICS teleprocessing monitor, giving Macintoshes access to DB2. Apple also announced that it had ported DAL to its own A/UX version of Unix.

Most of the new DAL support is being written by vendors other than Apple. Apple is working on the IBM ports, while other hardware and software vendors are writing ports to computers from Tandem, HP, DEC and Sun Microsystems, Inc. as well as to IBM's RISC System/6000, DG systems and client machines running MS-DOS, OS/2 and Unix.

A Way To Find Out How To Get More DASD From...No More DASD

IBM laptop faces tough market

BY MICHAEL FITZGERALD
and RICHARD PASTORE
CW STAFF

NEW YORK — By the time IBM's Personal System/2 laptop computer debuted last week, the only mystery still surrounding the machine was whether it will prove a viable entry and redeem the firm in the portable personal computer market.

Despite the hurdles of premium pricing, a late arrival and IBM's dreadful prior portable history, most observers said the L40SX will win market share at least as IBM targeted.

Among true-Blue customers, the machine may take share away from Compaq Computer Corp., Toshiba Corp. and other top-tier players, users and analysts said.

"Being exactly an IBM company, we've had to go to someone else for laptops. If IBM can meet our needs, we'll tend to go with them," said Marvin A. Moolenaar, head of information systems planning and client services at Northern Indiana Public Service Co. in Merrillville.

"Corporate buyers who are after the safety of a well-established brand name now have IBM and Compaq to choose from. And they're going to want

to go with IBM because it's the safe thing to do," predicted consultant Gib Hense, head of Booz, Allen & Hamilton, Inc.'s information industry practice.

However, the $6,000 price tag may hinder acceptance in the

Business traveler

Typically pricey, IBM's latest portable boasts large storage capacity and advanced graphics features

IBM PS/2 L40SX

■ **Processor**	20-MHz Intel 80386SX
■ **RAM**	2M to 18M bytes
■ **Hard disk**	60M byte (3 1/2 in.)
■ **Floppy disk**	1.44M byte
■ **Video**	Sidelit VGA, 32 gray shades
■ **Keyboard**	84 full-size keys with 17-key numeric key pad
■ **Power**	Up to three hours
■ **Weight**	7.7 pounds with battery
■ **Dimensions**	12.8 by 10.7 by 2.1 in.
■ **Price**	$5,995

Source: IBM   CW Chart: Doreen St. John

less IBM-loyal mass market, observers said. "IBM will have some problems because the discounts the Blue market gets won't translate to the mass market," said Wil Pastie, editor of "The Pastie Report" in Bolton.

Because IBM's numbers have released SX portables smaller and lighter than the L40 at two-thirds the price.

Because IBM was a nonplayer in laptops for so long, some corporate buyers have already standardized on other vendors and do not see much advantage in switching. "There are enough good computing machines out there from Toshiba, Compaq, Grid and Dell that I don't think it's going to be a runaway success for IBM," noted user Stephen Bond, microcomputer technology manager at Coopers & Lybrand in New York.

Another deterrent: IBM's past efforts in the market have left IS managers cold. "When I think of IBM and laptops, I think of failure," said Sam Coiello, MIS

director at Chicago-based Oil-Dri Corp. of America.

But unlike IBM's earlier Portable PC and PC Convertible, which did not measure up to their contemporaries in price/performance, the L40SX drew time being appears at least technologically equivalent to the rest of the market.

"It's a better me-too than I expected," said Tim Bajarin, executive vice president of Creative Strategies Research International, Inc. in Santa Clara,

Calif. He cited the size and clarity of the 10-in. screen. Other analysts and users have praised the full-size-sized keyboard.

"It's got the best keyboard of any [laptop] by far," said David Korus, analyst at Kidder, Peabody & Co. in New York.

Analyst sales projections call for a moderately successful year for the L40SX. With no supply constraints, IBM could sell 40,000 to 60,000 this year, said Peter Tiege, an analyst at Gartner Group/Infocorp.

Power of plastics

When IBM chose to launch a laptop effort in February 1990, it knew it could not afford the typical two-year lead time. Already late to market, the company saw its window of opportunity was closing fast. So IBM turned to its plastics technology arm for some innovative and risky design ideas.

"We decided if we could not enter the market in about a year, we would not have a good position in the market," said Toby Hancock, chief executive officer at IBM's Information Products Division in Lexington, Ky.

Hancock's group designed the sloped keyboard and casing electronically and sent the three-dimensional data electronically to plastics production contractor Leap Technologies, Inc. in Otsego, Mich. Leap put the designs directly into production, skipping the mock-up and prototype stages.

Last week, IBM officially spun off its printer and plastics business, which will now be part of Lexmark International, Inc. Both Lexmark and Leap will market their wares to other computer and noncomputer clients.

RICHARD PASTORE

Top-dollar Compaq LTE has carved out loyal user base

BY RICHARD PASTORE
CW STAFF

Judging by user accolades, it was love at first sight between notebook computer users and the Compaq Computer Corp. LTE 386S/20, which debuted six months ago. While the honeymoon flush has hardly cooled, users are starting to notice some annoying traits. They also realize the pricey LTE is no longer the only fish in the sea.

Enticingly priced notebooks based on Intel Corp.'s 80386SX chip have lured away some Compaq loyalists. An original-model LTE customer, Blue Cross/Blue Shield of Massachusetts, recently tapped AST Research, Inc.'s Premium Exec as its SX notebook.

"The street price is significantly less for the AST. On two units, the difference was $3,500 total," noted John Thibodeau, manager of Blue Cross' PC application department.

Compaq's $7,000 list price ranks it as one of the most expensive notebooks on the mar-

at Ciba-Geigy Corp.

Many users also said the LTE's quality justifies its premium. "All the products I've used from Compaq have been very reliable," said Jeff Low, a personal computer coordinator at Shell Oil Co.

However, the LTEs do have some relatively minor annoyances, these same users said.

The LTE's keyboard receives the most criticism. The cursor-control keys are rearranged, and the nonalphanumeric keys are smaller than their desktop counterparts.

Compaq attempted the traditional inverted-T cursor key pattern, said spokesman John Sweeny, "but every arrangement required compromise in the size of the machine, the keys themselves." Most users do not want the trade-offs, he said.

Keyboard aside, most users said the LTEs are a perfect match for their needs, price being their only concern. But that cause for concern may not last. Compaq will soon have to lower its prices in the face of mounting competition, analysts and users predicted.

ket. Dell Computer Corp., Tandon Corp. and others are shipping SX notebooks priced at less than $4,000.

Compaq spokesmen said many of the lower priced systems lack Compaq's 60M-byte hard disk, built-in cache controller, 8½-by-11-in. size and options such

Slow to market
The LTE is no longer the only notebook computer in town, now that competition from other low-priced SX notebooks is denting Compaq's designed integrated-power base

Units shipped					
	10/90	11/90	12/90	1/91	2/91
LTE 386S/20	580	1,060	3,100	4,000	4,500
	10/90	11/90	12/90	1/91	2/91
LTE 286	4,100	7,700	4,500	7,300	6,100

Source: Storeboard/Computer Intelligence   CW Chart: Marie Hansen

as an expansion chassis.

"Having the ability to put [the notebook] in a docking station makes my life very easy. It makes me much more productive, so it was worth the price," said Alice Goldberg, technology researcher and senior consultant

Novell
FROM PAGE 1

Limited application management is also available through Netware Version 3.11's support of IBM's Netview management system, a company spokesman said.

Sources at a Netware developers' conference here said they were told the new product was designed initially to manage unspecified Novell software on servers. A source close to Novell said any application — including general consumer applications such as word processing and spreadsheet software — could be monitored and controlled if they were written to link with Novell application program interfaces or under developer tools.

Network managers will be able to see when and why applications are faltering. In some cases, Novell and third-party software will be able to remedy the situation automatically, the sources said.

The software reportedly will be part of an overriding network management strategy that Novell executives said would be formally announced at the end of May. Some of those who saw the demonstration reported that Novell said it will develop standard application interfaces and that it plans to publish the inter-

faces this spring.

Network administrators will be able to program management agents to collect object-oriented information, report information through synchronous and asynchronous means to managers and, in many cases, act directly on that information, one source said. Objects specifically cited in Novell's presentation as recognizable by the agents included pages, strings, events, states and alerts.

The console, which is still under development, will combine information from Simple Network Management Protocol (SNMP), Common Management Information Protocol or other protocols with Novell's protocol, according to documents distributed at the demonstration.

Sources said they were told the console would monitor any device supporting SNMP.

One of SNMP's authors, Jeff Case, president of SNMP Research, Inc. in Knoxville, Tenn., said the protocol can be used to help manage any hardware or software item on a network.

Mitch Shults, an analyst at Business Systems Group, Inc. in Houston, said after attending the briefing that Novell's product has "powerful" implications for companies that need to cut down on the number of information systems people who must monitor and control network software and machines.

Rival data

said. "Both management systems can play both roles."

IBM and AT&T are designing their integration offerings along the guidelines of the Open Systems Interconnection (OSI)/ Network Management Forum's seven peer-to-peer network management architecture, Warner said.

The software will allow users to consolidate configuration databases and trouble ticketing systems, combine physical and logical alarms and share network status across their respective systems.

For example, one vendor's network management console, or host-based automation application, will be able to issue commands to the other vendor's management system to reconfigure a network system, initiate a test or collect status information. Users will also reportedly be able to graphically view the combined network installations on either vendor's management workstation.

These capabilities will extend to the third-party network management and networking systems that support Netview or Accumaster, vendor spokesmen said.

IBM's agreement with AT&T is likely to target prospective rather than existing Accumaster customers because AT&T's network management system is probably installed at only about a dozen companies right now, according to Ernst & Young

partner David Passmore. "As I understand it, a number of key Fortune 500 accounts who have large enterprise SNA networks and Netview are also interested in acquiring Accumaster."

Blue Cross links Big Blue

One such company is Blue Cross and Blue Shield Association, which recently announced plans to implement a high-speed corporatewide network that will connect IBM SNA hosts over AT&T lines (CW, Feb 11).

Having already picked Netview as its central network management system, the health care insurance giant has been "looking at Accumaster very carefully," said Blue Cross senior consultant Robert Schultz. "We see this announcement as

very, very positive, since integrating Accumaster with Netview would make it much more useful to us."

IBM may be trying to counter a similar agreement that AT&T made about two years ago to integrate Accumaster with Netview's archrival Net/Master, Passmore said. The new agreement with IBM will not affect AT&T's relationship with Net/Master's vendor, Systems Center, Inc., Gilbert said.

IBM and AT&T will work with users this summer on such issues as host-to-support the system and which connect integration applications to develop, Gilbert said. The product rollout should begin in the first half of next year, with integrated problem and configuration management and trouble ticketing software that will be available to users "as a straightforward upgrade" of existing Netview and Accumaster software, he added. Pricing was not available.

Despite the peer-to-peer nature of the integration, Accumaster will not be linked to Netview via IBM's LU6.2 peer-to-peer interface, according to Warner. However, the two vendors said, the software will eventually support OSI/Network Management Forum specifications.

IBM work force to lose 14,000

BY MARYFRAN JOHNSON
CW STAFF

ARMONK, N.Y. — IBM last week announced plans to reduce its worldwide work force of 373,816 by more than 14,000 employees in 1991 through a variety of actions that include "voluntary incentive" programs and normal attrition.

A company spokesman stressed that no layoffs are anticipated.

At least 4,100 IBM employees are already picking for a move to Lexmark International, Inc., the company formed last week in the $1.5 billion sale of IBM's information products business unit to Clayton & Dubilier, Inc.

IBM Chairman John F. Akers said the firm's actions are "measurably improving the company's competitiveness." IBM will continue taking "the necessary steps to improve shareholder value for the years ahead," he said.

Accounting change

As one part of a long-term restructuring that began in 1986, IBM began implementing in January an accounting change mandated by the Financial Accounting Standards Board. The change requires firms to show on their balance sheets the costs of medical, dental and life insurance spanning each employee's career.

For IBM, compliance means a one-time, $2.3 billion after-tax accounting adjustment to recognize the accumulated obligation for IBM's active employees.

Company officials said the actions would have no impact on IBM's 1991 operating results. "We're not throwing any money over the side," spokesman Steven Eames said. "It's just an obligation that is listed now that was not listed before."

The latest restructuring moves should result in before-tax net savings of approximately $400 million in 1992 and annual savings of $600 million thereafter, IBM estimated.

Quattro Pro 3.0 rushes out

BY JAMES DALY
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. stepped on the gas in the fiercely competitive spreadsheet market last week with the introduction of a Quattro Pro upgrade only five months after the product's last release.

The release of the more graphically intensive Quattro Pro Version 3.0 marks a victory for Borland's object-oriented program development approach, which has enabled the company to build and release applications at a dizzying speed. The ac-

celerated introduction schedule has also allowed Borland to gain a step on market leader Lotus Development Corp. Lotus is expected to unveil its updated 1-2-3 Release 2.3 spreadsheet later this quarter.

Borland's aggressive approach appears to be paying off: According to Framingham, Mass.-based market research firm International Data Corp., Borland's U.S. spreadsheet market share doubled to 24% for the year ended Dec. 31, 1990.

In addition, the company continues to work on a version of Quattro Pro that will be optimized for use with Microsoft

Corp.'s Windows 3.0 graphical user interface.

Quattro Pro 3.0 includes several what-you-see-is-what-you-get (WYSIWYG) features, including zoom features, pull-down menus and full mouse support. The upgrade will work on IBM Personal Computer XT-class machines with as little as 512K bytes of memory, according to Stephen Kahn, Borland's vice president.

Early users said the added WYSIWYG features have cut time and guesswork from their spreadsheet chores. "We get the results we want the first time we print," said Mike Finley, director of information systems at Six Flags Corp. in Houston.

Version 3.0 will be offered at a suggested retail price of $495. Registered

owners of Quattro Pro Version 1.0 can upgrade for $99.95, while owners of Quattro Pro Version 2.0 can upgrade for $49.95. A local-area network setup, which adds one additional user to the network, costs $395. Borland will also offer competitive upgrades to owners of other high-end spreadsheets for $129.95.

The company also unveiled Proview Power Pack, a collection of graphics enhancements for Quattro Pro Version 3.0 users. Proview Power Pack provides additional clip art, fonts, macros and other presentation materials to augment those already found in Version 3.0. The package is included free in Quattro Pro Version 3.0 or may be purchased separately for $49.95.

Additionally, Borland introduced Paradox SQL Link Version 1.1, which connects PCs with data residing on a mainframe, and added Sybase, Inc.'s Sybase SQL Server relational database management system to the list of SQL servers supported by Paradox SQL Link. Paradox SQL Link Version 1.1 has a suggested retail price of $495.

Hacker sentenced to prison term

BY MICHAEL ALEXANDER

CHICAGO — A self-styled computer hacker, who federal authorities said engaged in industrial espionage among others crimes, pleaded guilty to felony charges in Baltimore and Chicago last week. Under terms of a plea bargain, Leonard Rose, 32, will serve concurrently a one-year prison term for his role in each of five alleged fraud schemes.

In pleading guilty to the charges, Rose admitted that in October 1988 he knowingly received AT&T Unix source code from a former AT&T contractor who stole the code, according to U.S. Department of Justice documents.

The consultant, who authorities said is now working under contract at IBM, remains under investigation.

"Rose provided the black market for the exchange of Unix source code to various people in Texas and Illinois," said William Cook, assistant U.S. attorney in Chicago. Rose also admitted to having inserted a Trojan horse program into the code's log-in sequence that was designed to secretly collect passwords.

Federal authorities in Chicago said Rose, who used the handle Terminus, also admitted that in January 1990 he transferred the stolen Unix source code to a bulletin board system in Lockport, Ill., and to a computer account belonging to Craig Neidorf, a student at the University of Missouri.

In February 1990, Neidorf was charged in an unrelated case with conspiring to steal and publish a document describing the operation of Bellsouth Corp.'s 911 emergency telephone system. In July 1990, federal prosecutors dropped the charge against Neidorf, a former publisher of an electronic newsletter for hackers and telephone phreaks.

Rose also admitted that he downloaded the source code of proprietary AT&T programs stored in computers belonging to his employer, Interactive Systems, Inc. in Lisle, Ill., according to authorities.

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AT&T
Network Systems

DEC offers enhancements to tape subsystem line

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. polished up its dull reputation in tape subsystems last week with the announcement of several high-performance tape products, including a new link between VAX/VMS systems and Storage Technology Corp. tape libraries.

"DEC has filled in virtually all of the major gaps in its product line," said Robert Abraham, vice president at Freeman Associates, Inc., a market research company in Santa Barbara, Calif. "They never had the edge of combining high capacity and high performance before. Now they do."

Topping the list of new products is the $29,000 TF857 magazine tape subsystem with an unattended backup capacity of 18.2G bytes and a user data transfer rate of up to 800K byte/sec. Of greatest significance to DEC users, analysts said, will be this drive's ability to read data from previous DEC tape drives.

New technology, lower costs

The TF857 also uses a new technology with ¼-in.-wide metal particle tape, which provides longer media life with lower operating costs than helical-scan tape drives. The only other large vendor to commit to metal particle tape is Hewlett-Packard Co., which produces the 4mm digital audio tape drive that DEC resells.

Other welcome news for DEC users should be the partnership with Storage Tek to interconnect its 6,000-cartridge tape library with Vaxcluster systems running VMS Version 5.4 through an adapter and specialized server software.

"By making that available, DEC is removing an obstacle its salespeople have run into when selling high-end DEC systems against IBM," said Stan Corker, an analyst at the San Diego office of International Data Corp.

Just by spelling out its tape system strategy, DEC should clear away a lot of user frustration with the vendor's scattershot approach in the past, Corker added.

DEC also announced the TA91 cartridge tape subsystem for the VAX 6000, VAX 9000 and Vaxcluster systems as well as VMS support for the TZK10 ¼-in. cartridge tape drive.

Cisco routers win DEC role

BY JOANIE M. WEXLER
CW STAFF

To round out its selection of computer and communications equipment, the internetwork services arm of Digital Equipment Corp. has elected to install Cisco Systems, Inc. multiprotocol routers rather than wait for a homegrown DEC product currently under construction.

Last week, DEC confirmed a one-year renewable reseller agreement with the router market leader that adds Cisco routers, bridges and network management products to DEC's U.S. price book. Cisco said the contract includes plans to expand the resale of its products worldwide within three months.

DEC affirmed that its networking group is continuing work at its multiprotocol router. The company would not provide a rollout schedule or comment on how DEC and Cisco products would be positioned vis-a-vis one another except to say that they will be "complementary."

"This is part of DEC's scramble for revenue," commented Janet L. Hyland, director of network strategy service at Cambridge, Mass.-based Forrester Research, Inc. "The DEC integration group is trying to bid on big jobs for multiprotocol environments, and the company doesn't have its own product."

DEC is already a leader in the router market by virtue of its installed base; DEC routers on the market today transport only the company's proprietary Decnet communications protocols. Cisco and other vendors' routers forward network traffic among heterogeneous environments by supporting multiple vendors' proprietary protocols as well as the public-domain Transmission Control Protocol/Internet Protocol.

Why Cisco?

Cisco routers support a frame-relay interface that incorporates with the frame-relay interface on fast-packet pioneer Stratacom, Inc.'s T1 multiplexer, also a DEC partner. The Cisco relationship thus gives DEC the ability to sell a complete fast-packet network to early adopters of the emerging wide-area technology.

The Cisco/Stratacom combination will give DEC a short lead in the market for selling to the few companies who are now ready for fast packet," Hyland commented. "But generally, by the time most companies are ready for the technology, the other router and T1 multiplexer vendors will support it, too."

DEC already resells Advanced Computer Communications, Inc. and Vitalink internetworking products. Proteon, Inc. said it is currently negotiating a deal with DEC similar to the Cisco partnership.

ADVANCED TECHNOLOGY

Scientists put their feet on the GaAs

Gallium arsenide draws increased attention as a faster alternative to silicon CPUs

BY MAURA J. HARRINGTON
CW STAFF

With about a decade of refinement behind it, gallium arsenide (GaAs) is finally being viewed by some corporate and academic researchers as a realistic alternative to silicon.

New methods of GaAs-based process manufacturing, and the triple-layer metal method and photo lithography for GaAs, have drawn many high-end supercomputer vendors and private developers into finding a way to replace their silicon CPUs with the CPUs made with GaAs.

The two main components that make GaAs attractive to scientists are the natural high speed of the compound's electrons and its low-power dissipation, which is between one-fourth and one-half that of silicon, according to Gene Miles, an independent analyst.

"There is no doubt that gallium arsenide is a faster semiconducting material than silicon," Miles said.

High transfer rate

Traditionally, it has been difficult to put a high number of transistors on a chip made of GaAs because the high transfer rate of the electrons causes crossover between the CPU and the primary cache, according to Rich Brown, project director at the University of Michigan in Ann Arbor.

Cannarillo, Calif.-based Vitesse Semiconductor Corp. has been able to pack up to 1 million transistors on a GaAs chip, according to Tom Dugan, director of Vitesse's Standard Products Division.

Two changes made in GaAs technology at Vitesse during the mid-1980s

contributed to the company's success with its business of making high-speed logic chips with GaAs, Miles said.

First, switching from using gold to aluminum in the gate structure of the interconnects helped cure a former gate bottleneck. Second, updating the company's manufacturing process from wet etching to a dry etching technique helped to solve the problem of the chip's brittleness, Miles explained.

Brown, who is supervising a team of faculty and students working on a CPU made with GaAs, said that since the team began the project two years ago, they have found that the combination between the hit rate and cycle time is vital to the success of a CPU made with GaAs.

Brown said that what separates his project from others going on at Japan-based Fujitsu Ltd. and Cray Research, Inc. is that his team has worked for two years to build computer-aided design

tools that were made specifically in order to optimize the qualities of GaAs wafers.

Brown added that the university will eventually market the tools to help GaAs semiconductor manufacturers in the future.

Vitesse and other GaAs semiconductor manufacturers said they believe that CPUs made of GaAs wafers will be a viable alternative to silicon by 1992.

However, semiconductor analyst Michael Slater at Micro Design Resources, Inc., a market research firm based in Sebastopol, Calif., said that despite the advances made in GaAs technology so far, it will be three to five years before the technology gains acceptance as an alternative to silicon in the high-end CPU market. He claimed the two major factors barring GaAs-made wafers from the silicon-dominant CPU market are high price and low density.

Software offers clearer images of the heart

BY MICHAEL ALEXANDER
CW STAFF

Researchers at the State University of New York at Buffalo have devised an interactive computer program aimed at enabling cardiologists to diagnose heart disease more accurately.

The new program is based on research in fundamental cognitive psychology about how people see, gesture and focus their attention. An algorithm in the software is based on psychological theories about how people perform these actions, according to David Sher, an assistant professor of computer science and one of the co-developers of the program.

Using the program, cardiologists will be able to use a computer to automatically highlight potential trouble spots in the heart walls depicted in a digitized image of an echocardiogram by merely gesturing with a light pen or cursor. Currently, heart physicians diagnose heart disease by viewing videotapes made from echocardiograms. The physicians note variations in the thickness of the heart walls and make other simple measurements by stopping the tape and examining the static image.

The pictures often have poor quality and lack important details, said Dr. Steven Rosenthal, a University at Buffalo clinical assistant professor of medicine, who collaborated with Sher on the project. The physicians already outline the heart walls in an echocardiogram with light pens or cursors, but the drawings are tedious and the results are imprecise, he said. "People are not

very precise about locating where things are in an image," Sher said. "Computers are precise, but they confuse easily. With this computer program, we want to take advantage of the precision of computers and the intelligence of people."

The researchers also hope to develop a technique that will enable the computer to automatically trace a moving image of the cardiac wall and make precise, reproducible measurements while the physician simply monitors those measurements, making corrections where necessary.

The researchers said they believe the computer program will eventually be able to provide precise information on other ventricular functions such as the rate of contractions at different points in the walls and the volume of blood that is ejected from the heart.

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EDITORIAL

Repeal 1706

IMAGINE BUILDING A structure from the ground up without any detailed plans and then, after it's built, returning to the scene and finding various structural flaws, some of which undermine the very integrity of the building.

What are you likely to do? You knock it down and start again if the problems are bad enough.

That's what ought to be done with Section 1706 of the Tax Reform Act of 1986. Ditch it. That's the only conclusion that can be gleaned from the largely inconclusive and long-awaited study released by the U.S. Department of the Treasury last month.

Section 1706 bore the mark of doom from the start. It was tacked onto the Tax Reform Act without debate or proper hearings. Undoubtedly such hearings or an inquiry by the General Accounting Office would have unearthed at least some of the ambiguities and inconclusiveness offered by the Treasury study.

Specifically, 1706 segmented contract programmers, especially those working through brokers, as a special group apart from other contract workers. The rule essentially reclassified many of these programmers as permanent employees. Its stated intent was to make sure these programmers paid their fair share of taxes, implying that they were prone to chronic underpayment.

The independent contractors affected by the legislation sparred lustily with the big service companies, represented in large measure by Adapso, which lobbied heavily for passage (and now maintenance) of 1706. Both sides agreed to an independent Treasury study to assess the impact of 1706 on tax revenue and on the independents as well.

The study was so wishy-washy that both sides immediately claimed victory. What the study *did* determine was that 1706 is largely revenue-neutral. In other words, if people were cheating on their taxes, 1706 hasn't done anything to boost tax revenue. More likely, the contractors really weren't cheating that much to begin with.

What 1706 has done very effectively is sow confusion in the marketplace. The Internal Revenue Service guidelines promulgated a couple years ago were labeled as such by a federal judge. Ironically, 1706 was tacked onto a broader bill whose aim was tax simplification. In the spirit of the same, it should be repealed.

Singling out technical workers who use brokers isn't fair and never was. Why should one set of rules apply to contract programmers and another to, say, contract janitors?

In concert with a repeal, the IRS should put some more teeth into enforcement of its abundant existing codes. Make it painful to willingly misclassify an employee as an independent contractor. Catch the tax cheats and levy fines that the majority of people who pay their fair share would deem worthy.

But let's stop tarring and feathering one select group. The fact that this was done in the first place casts sufficient suspicion on the intent of 1706 and this in itself is reason for repeal.

CAPTAIN 'AHAB' AMDAHL

Moby APL Cycle

LETTERS TO THE EDITOR

Make tech, not war

I was very supportive of Gary Chapman's viewpoint "Beware the fruits of war-tech" [CW, March 4]. Our country is the only superpower in the world glorified as being the best at war. The thought that our dominant industries have become dependent on pursuing destruction through the use of powerful aristocracy is, to say the least, wasteful.

Considering that we have the technology to destroy ourselves and that our largest industries rely on providing anyone with resources the ability to destroy each other (remember Iran vs. Iraq — whose side were we on?), concentrating our energies elsewhere could be much more rewarding.

With additional economic problems surfacing at home every day, our unparalleled ability as innovators could be put to better use pursuing productive world markets that provide the opportunity to re-establish America in its rightful place. At the top.

W. Brian Cornwell
Research Marketing Coordinator
Sigma International, Inc.
Oakton, Va.

Good decisions

Regarding "Decision-making prowess" [CW, March 4], Mr. Fried's guidelines fall into the very same EIF trap they allude to avoid. They represent traditional systems development methods used to debate static requirements, e.g., accounts payable.

Executive decision making is a dynamic process with highly fluid requirements. These requirements only apply to the business analysis which is in process. A successful completion of an analysis will often eliminate the requirement and spawn new and different information requirements.

Most importantly, the business/systems analyst's mission is to generate new "insights" about the business. These insights allow the executive to make decisions that are new and different. In other words, insights which allow the executive to gain competitive advantage from business insights not realized by competitors.

Edward P. Deiher
President
Competitive Advantage Systems, Inc.
Chesterfield, Mo.

First blush

Please advise Karen Lee Cocks [CW, March 18] that the expression "at first blush," far from being an "esoteric, new-age term," is a well-accepted phrase using the word "blush" as a noun meaning "appearance."

Unfortunately, many well-meaning people are afflicted with knee-jerk paranoia.

Jed E. Goldberg, M.D.
Miami, Fla.

Second blush

Karen Lee Cocks should check her dictionary before she criticizes your use of the term "at first blush."

Funk & Wagnalls has this to say about the use of the word "blush," "A glance; glimpse: now only in the phrase at or on first blush."

I hope this "esoteric new-age term" doesn't embarrass her.

Denis Maher
Manager
Database Administration
University of Colorado
Boulder, Colo.

Oracle update

We were very gratified to read that our IBM mainframe installed base was pleased with our relational database management system, computer-aided software engineering (CASE) and tool offerings [CW, Feb. 25].

Since the survey, however, some changes in our product line have addressed one of the major shortcomings cited by your respondents: the integration of our CASE tools.

We have now released the Oracle CASE product line for IBM MVS and VM. This means that Oracle users can utilize one integrated family of CASE and application development tools in their IBM environments. Oracle users can distribute their database and tools in a client/server environment to take advantage of diverse hardware, operating systems, graphical user interfaces and networking protocols.

Dave Jones
Senior Director
IBM Product Line Marketing
Oracle Corp.
Redwood Shores, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

Leaving the Computer Stone Age

Our vision of what this tool can do is mired in the past

JOSEPH F. COATES

The computer has, to a large extent, fallen into the hands of dullards and short-term optimizers. That this marvelous product of American genius is increasingly and unnecessarily a rasping annoyance and irritation reflects a failure of business acumen.

All technologies are introduced in phases. What has happened with the computer, however, is that in almost every large organization, it is stalled at phase one or two and used as a slave for the optimization of old functions rather than as aid in the creation of new ones.

All technologies are first introduced as a substitute means of performing some function that we want to do better, quicker, sooner or more reliably. The computer was introduced primarily to serve the interests of the back room boys — the green eyeshade crowd with their passion for counting the pennies and keeping the accounts straight.

That was fine for a while, but this stage dragged on far too long in most cases, and it is still going on in many.

It wasn't until almost 20 years after the computer was introduced into hospitals that it began to be an effective tool in the practice of medicine. In retailing, which is presumably more directly driven by a passion for customer satisfaction, the back room boys have dominated for so long that we are barely beginning to see the application of computers at the customer interface.

Only efficient

The second phase in the introduction of a technology is the search for more microeconomic benefits through reorganization of the flow of materials, goods or paperwork. This passion for efficiency often results in the sacrifice of effectiveness. Mindless machines in the service of robotized managers cannot seem to be useful or nice to their customers.

The traffic division in Washington, D.C., is a good example. This commendably efficient organization has a marvelous capability for keeping track of those who neglect to pay their parking

Robert Pinkerton

tickets or commit other petty offenses. However, I have yet to receive from it one positive or useful notice relating to the effectiveness of any of the programs that are fed with my taxes and my information.

Government is not by any means the only offender. Departments stores, mail-order houses and supermarkets all suck up massive amounts of information about consumers and give little or nothing back in terms of either value or service.

The third stage of the introduction of all new technologies occurs when they become cheap, familiar, commonplace and well understood. Thus in the revolutionary phase, unprecedented applications tumble forth in abundance. Let us hope we are on the verge of that stage with computers and that we can find the will and the imagination to move forward.

What would the world be like if the computer were in the hands of imaginative and creative organizational leaders and technicians who were rewarded for effectiveness and customer service? We might have telephone operators who are actually able to be helpful, instead of *pore* drudges beleaguered by computer counts of their second-to-second activity. We might also be able to feel in a department store clerk who could call up our last five purchases, say something intelligent about our interests and direct us to a product particularly reflective of our established buying habits.

Playing the game

Somebody has to pick up the ball and make the computer as effective part of our modern world. If I could lay down a law, it would be that every manager of a computer system and every corporate mogul owning systems would be forced to spend 20 hours at Nintendo and 100 hours watching music videos. In that way, they might come to some understanding of what the computer is capable of.

If I were in charge of any large computerized organization, I would immediately fire most of the people responsible for its use. What they lack is playfulness, a passion for innovation, an orientation toward customers, a total systems approach to the business and even a scintilla of willingness to take a risk. To those people who are in charge, I recommend one question: Ask yourself "What has the computer done for us lately?"

Coates is president of J.F. Coates, Inc., a policy research organization. He was formerly assistant to the director and head of exploratory research at the Congressional Office of Technology Assessment.

First (and last) laughs

PAUL GILLIN

Salt in the sugar shaker? That's kids stuff! Here's some April Foolery fodder for funsters in the corporate information systems department. See if anyone can resist a snicker when you spray your surprises on these folks:

• **Your print shop manager:** A jar of strawberry jam, a spatula and a room full of printers add up to some fun at invoice time! Imagine the mirth as the print room crew scrapes preserves off those terribly touchy printheads. Peanut butter, anyone?

• **Your applications programming manager:** It's amazing how many laughs you can get from one little programming change. Just take that payroll source code, move the decimal point one space to the left, recompile and get ready for payday mayhem! Do move it one space to the right and watch your CFO's head explode!

• **Your IS director:** This is what mail merge was made for! A motsy resignation letter, the department personnel list, a tall stack of paper, and your boss thinks his whole staff has called it quits! Was it something he said?

• **Your end users:** How many

do you think will notice that their PC monitor is upside down? "Must be a virus," you say with a straight face. "You'll just have to live with it." Think of the neck injuries as they struggle with those inverted spreadsheets!

• **Your operations manager:** A power drill, a funnel and a big box of tapioca pudding turn your data center into a funhouse. Find the primary feed pipe to those water-cooled mainframes, drill a little hole and let the hijinks begin!

• **Your network manager:** Don't look now, but CICS is coming to its knees! All it takes is a PC, terminal emulation software and a little programming loop. Can you really be logged on enough times to tie up a $6 million mainframe? You bet!

• **Your personnel director:** It's such a tiny magnet but such a big problem when dropped in that box of super-confidential floppies! Surely he had them backed up. He didn't?

• **Your unemployment officer:** You gave him your employment history and letters of reference. Wasn't it sloppy of him to leave them on that shredder pile? Hey, no fair! You're the one who's supposed to play the jokes around here!

Gillin is Computerworld's executive editor.

Why take the RISC? We're all wondering

PETER BARTOLIK

Now, let's see if I've got this straight. Compaq, DEC and Microsoft are teaming up with RISC chip developer Mips Computer in a bid to stave off the market dominance of Sun and — take your pick — IBM or HP. On yeah, let's not forget that The Santa Cruz Operation, leading provider of the desktop Unix operating system, is also involved.

Something for everyone

These companies, we're told, are going to band together in early April to promulgate a specification for a new type of RISC workstation. It will be a *better* mousetrap, one that will not only provide the power of RISC but also tap into shrink-wrapped applications available for SCO Unix and Microsoft's Windows 3.1 and OS/2 Version 3.0 (or is it New Technology OS/2 or maybe Portable OS/2 — heck, I'm just gonna call it OS/3 as some others have taken to calling it).

OK, I get it. This is going to

be a new generation of desktop devices, picking up where Intel leaves off. No, that can't be right; coming away from the debacle of OS/2 Versions 1.0 and 2.0, Microsoft surely understands that computer users are in no hurry to make that type of generational leap in technology. No way are they going down that path again after convincing everyone to upgrade their DOS applications to Windows applications.

Now, we all know Bill Gates and IBM are on the outs these days over OS/2, so maybe this is really designed to stick it to IBM and its successful RISC System/6000. That's a goal that DEC and Compaq can really belly up to. That makes sense.

Oh-oh, wait a second — DEC is going to push this as an Open Software Foundation (OSF) OSF/1 platform. But isn't DEC in cahoots with IBM — and HP, too — in the OSF and its plans for a better form of Open? And isn't DEC talking about a RISC-based VAX technology to drive its VMS operating system into the future?

Oh, forget all that. I've got it now. Everyone knows that nobody likes Sun. This is just a way

to block off the wild success of its Sparc architecture that recent reports now claim has achieved a 65% market share in the RISC market. No way can the industry let this upstart forge a monopoly in the RISC industry. Heck no!

Too big for its britches

I mean, just look at what Sun has done. Not content to stick with the Motorola CISC architecture, it went off and did its own RISC implementation. Not only that, but once Sparc was established as a viable product, the product specifications were turned over to a group known as Sparc International, which is responsible for future development of the architecture. And get this: Anyone who joins Sparc International not only gets the specs but also has a say in how to improve on them.

Just imagine what kind of shape the industry would be in if Intel had ever taken that approach — uh, strike that thought. We all know the computer industry didn't get where it is today using a committee approach to technology development.

Let's start again. There's a committee of five vendors — Oh, forget it. This stuff is just too complicated. I need a lawyer to straighten out who's doing what to whom.

Bartolik is Computerworld's news editor.

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🎵 SOFTWARE AG

Stratus compiler spells migration boost

ANALYSIS

BY MARYFRAN JOHNSON
CW STAFF

MARLBORO, Mass. — The element of surprise worked well for Stratus Computer, Inc. recently, when the fault-tolerant vendor unveiled the first in its new generation of machines.

Once it starts shipping next fall, the XA/R Model 20 will be the industry's first crash-proof, reduced instruction set computing (RISC) machine with the unexpected bonus of a dual operating system.

Stratus users can choose between the proprietary Virtual Operating System (VOS) or the Unix-based FTX, bringing their old applications to the new platform by recompiling them to run in native mode.

Challenging move

Much larger companies than the $341 million Stratus have struggled with the technical challenges involved in such a move and found them daunting. The $13 billion Digital Equipment Corp., for example, is still months away from producing a VAX computer with a RISC CPU that will be able to run the 10,000 existing VAX/VMS applications.

So how did Stratus pull this off so gracefully?

The two-part answer lies in the 11-year-old company's early choices.

Stratus' VOS was written in high-level languages, mainly PL/1 and C, that enable it to disengage smoothly from the

underlying chip architecture. Only 3% of VOS is written in assembler language, which is notoriously difficult to port from one operating system to another.

Added to that is Stratus' sophisticated compiler technology — separating the code generator and optimizer from the compiler — which allows the company to change from Motorola, Inc.'s 68000 microprocessor to Intel Corp.'s i860 RISC chip with relative ease.

"The only way to successfully get two operating systems to run on the same platform is to engineer the idea in close to development of your systems," said Wayne Kernochan, an analyst at The Yankee Group in Boston.

"Stratus has compiler technology that has allowed them to map the instructions from their

standard 68000 technology over the i860, which is a pretty full-featured processor," said James Hammonds, vice president of The Sierra Group, Inc. in Tem-

Mass movement

▶ Stratus' XA/R Model 20 will be available this fall for $167,000 with the Unix-based FTX Release 2 or for $275,000 with VOS.

▶ The Model 20 features a duplexed processor built around the Intel i860 running at 32 MHz with 512K bytes of cache memory added to the board

▶ The new RISC-based platform will also include the Motorola 68000 series of chips because its intelligent subsystems for communications and disk I/O will be based on the 68020

▶ Stratus users can recompile all current applications to run in native mode on the XA/R Model 20 under either members of the line. All application development tools offered on VOS will be available on the RISC platform

▶ Stratus' VOS is written in the high-level languages PL/1 and C, with less than 3% written in assembler language, making VOS portable between different architectures

CW Chart: Darren St. John

pe, Ariz.

"What is even more impressive is that users don't have to worry that much about their upgrades," Continued on page 32

Imaging poll shows interest, not action

BY ELLIS BOOKER
CW STAFF

SILVER SPRING, Md. — It is getting to be standing room only in the *Theatre de Imaging*, but there are still relatively few performers onstage.

End-user interest in electronic document imaging has never been higher, according to a recently released survey of end-users by the Association for Information and Image Management (AIIM) and Datapro. Seven of 10 respondents, or 71%, of the survey sample said they have, are considering or are planning to implement an imaging system.

This is up from 57% in AIIM's last major survey published in 1990.

However, of the 866 respondents, only 37% actually had a system in place. Of these, 26.9% had a single system in production, 2.5% had three systems, and 4.7% had two systems. Just 1.9% of the surveyed users had four or more imaging systems installed.

Growth in future

Nevertheless, the survey revealed that most users think document imaging will rapidly grow in importance for them. Users predicted the percentage of

their documents stored and retrieved in digital form would grow from 15% today to 62% in five years.

Accompanying this growth, expenditures on document imaging will grow from 10% of the total information systems budget today to 27% of the budget in five years, the users predicted. These estimates, however, are somewhat lower than answers users gave in AIIM's 1990 survey, in which they said imaging would grow from 14% to 31% of their budget in five years. In the 1990 study, users had predicted their imaging budgets would more than double in five years.

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Making U.S. intelligence more intelligent

BY GARY H. ANTHES
CW STAFF

When Iraq invaded Kuwait last August, U.S. intelligence analysts around the world saw an explosion in message traffic, a tidal wave of intelligence data that was difficult to deal with on a timely and orderly basis. One year from now, those analysts will have a new system in place, one that will help them deal with work load spikes caused by global emergencies.

McDonnell Douglas Electronic Systems Co. recently won a five-year, $40 million contract from the Pentagon to install an Automated Message Handling System (AMHS) for U.S. military intelligence agencies. The system, to be installed at 50 sites worldwide, will feed message traffic from Autodin, the U.S. Department of Defense's message-switching network, and news stories from commercial wire services to thousands of intelligence analysts.

The purpose of the system is to give intelligence analysts a real-time pulse of the world's activities so untimely events can be anticipated and military and political trends can be spotted and analyzed. Officials said the new system will enhance both the timeliness and sophistication of analysts' work.

Each of the 50 centers will have from two to four Digital Equipment Corp. DS 5000/200 servers routing information to as many as 500 intelligence analysts on a local-area network. The magic of the system, according to McDonnell Douglas, lies in the servers' software for tailoring a flood of information to the needs of individual analysts.

The DEC Ultrix-based servers will run Topic Real-Time, a concept-based retrieval system from Verity, Inc. Topic will hold user-specified profiles that define the subjects of interest to the analyst as well as weights indicating the importance of each topic and subtopic. The profiles act as filters, sending notices to analysts' workstations when messages or news stories of interest are received at the server. Messages are also ranked in order of their overall importance to the analyst.

"The analyst might have 500 messages to look at in a half hour," said Don Griggs, McDonnell Douglas' AMHS program director. "That's the beauty of Topic — he can look at the 20 most important, clicking on them as he wants to see them."

Information tree

The U.S. Department of Defense's new message handling should allow intelligence analysts to source numerous subtopics for each general topic

		IRA
Named actor		IWA
		ETA
		Basque
		Red Army
		Red Brigade
		PLO
Assassination		assassinate
		bottle-
Encounter		skirmish
		fight
		attack
		uprising
Explosion		explode
		explosion
		blast
Kidnapping		menace
		hijack
		kidnap
		kidnapping
		abduct

Terrorism

CW Chart: Marie Haines

system that is based on DEC PDP-11 minicomputers accessed through dumb terminals, said U.S. Air Force Maj. Jim Daly, AMHS program manager. The system has primitive profiling capability, no feeds from wire services, no message archiving ability, and it cannot keep up with peak loads, he said.

Air Force Capt. Terry O'Heron, intelligence systems manager, estimated that the new system will save the Air Force between $75,000 and $100,000 per site per year in software maintenance costs. That is because 90% of the system is built from commercial off-the-shelf software, which is more reliable and requires no on-site support, he said.

Users will be able to do "retrospective searches" against an on-line magnetic disk database holding three months of messages or against an on-line optical disc system holding from six months to five years of activity. The searches also use Topic's concept-based retrieval methods, in which users define queries at any level in a hierarchy of subjects and then automatically receive information about related subjects.

AMHS replaces a 15-year-old

RJR keeps tabs on parts with imaging system

Inventory cuts, more uptime may lower costs

ON SITE

BY SALLY CUSACK
CW STAFF

WINSTON-SALEM, N.C. — Even as revenue shrinks in its controversial industry, R. J. Reynolds Tobacco Co.'s three major U.S. plants, in Winston-Salem and Tobaccoville, N.C., are churning out 190 billion cigarettes per year.

Divided into approximately 140 production units, the three facilities each house nine integrated cigarette-making machines. Each unit, or cell, produces 8,000 cigarettes per minute, and there are approximately 35 different maintenance manuals pertaining to the machinery located in each such cell.

To better track spare parts inventory and catalog the voluminous maintenance manual instructions, RJR Tobacco relies on a Wang Laboratories, Inc. imaging system and several integrated software programs devel-

oped in-house with Software AG of North America, Inc.'s Natural fourth-generation language (4GL) and Adabas database packages.

The company started looking for a system to coordinate spare

RJR Tobacco uses Wang systems to track spare parts and other maintenance manuals

parts availability with maintenance instructions in 1989. The bulk of the machinery comes from Europe, and the translations are not always straightforward, said Don Tylak, principal systems analyst at RJR Tobacco.

"The crux of the problem was

that we did not have a bill of materials system. There are 120,000 spare parts to keep track of, and there was no way of knowing which parts went on which machines," Tylak said.

The company first decided that developing and integrating a bill of materials system with an imaging platform would be the optimal solution.

RJR Tobacco was already using IBM mainframes and Digital Equipment Corp. systems throughout the organization and had been using Software AG's product as the corporate database management system and 4GL for almost eight years.

RJR Tobacco was also using Wang equipment, Tylak said, but that was primarily relegated to office automation and word processing operations.

"We proposed to prototype imaging on all the platforms, and one of the stipulations was that the imaging be compatible with the Software AG program," Tylak said.

Neither IBM nor DEC had corporatewide, commercially available imaging systems at the time, and RJR Tobacco eventually elected to use the Wang Integrated Imaging System software on a Wang VS 5000 platform.

RJR Tobacco developed a bill of materials system with Natural and Adabas. Diagrams from the maintenance manuals were scanned into the Wang system, cleaned up and updated on a personal computer using Wizard, a Wang image-editing product.

The final images, including pictures of the assemblies and their parts, are then stored on magnetic disks. The system currently has 3,000 stored images.

There are 14 Intel Corp. 80386-based workstations connected to the Wang system, which in turn communicates over 56K bit/sec. lines with an IBM 3090-600J mainframe at the company's Winston-Salem headquarters.

The typical end user, Tylak said, is a mechanic who is not enthusiastic about using computers. "What they do like about the system is the quick delivery of spare parts," Tylak said.

To search for and order a part, mechanics simply log onto the system, pick an image and select the parts they need. The order is then transmitted to a stock room printer.

The printout shows who ordered the part, where it can be located and where it is to be delivered.

According to Tylak, RJR Tobacco will save by reducing spare parts inventory while increasing uptime and improving quality control numbers.

Staffs prepare for GTE/Contel merger

Merger teams looking for the best way to combine systems, 6,300 workers into one unit

BY ELLIS BOOKER
CW STAFF

STAMFORD, Conn. — Although GTE Corp.'s $6.6 billion acquisition of Contel Corp. was legally finalized last month, "merger teams" from the various business units of both companies have been meeting since last summer to figure out how to combine the two organizations.

One of the most complex of these combinations will be in the information systems departments supporting the telephone operations, which together have 6,300 employees.

Once merged, GTE and Atlanta-based Contel will become the largest carrier of local telephone traffic in the U.S. and the country's second largest cellular phone provider.

"The goal is to consolidate the two operations," said Martin C. Hoppe, vice president of corporate information management services at GTE.

Hoppe was adamant that following thorough evaluations of the computer platforms and software systems at each telephone group, there would be common customer information and customer billing systems. "We will not run duplicate functions," he said. "One [system] will go away."

"The telephone side is very systems-oriented," said Don Peeples, vice president of information technology at GTE telephone operations. He said the hoped-for operational synergies and cost savings would come from the merger depended on "getting the same platforms, processes and methods."

Peeples, in fact, was put in charge of the merger teams for the entire telephone operations group, including the IS departments.

An early and key decision for the IS team, Peeples said, was the choice not to "cherry pick the best of best" from each company's applications and computer hardware. Aside from the expense of creating interfaces between the dissimilar systems, such a process would have taken too long.

"Very quickly and early on, we decided to be fairly arbitrary and say the GTE systems would be the surviving systems," said Peeples, adding that some of the most promising Contel applications will be worked on as research and development projects.

In addition, Contel's Bull HN Information Systems, Inc.-based customer databases, which hold the records of 2.6 million subscribers in three data centers, will be converted to the primarily Cobol-based MVS format used on GTE's IBM and Amdahl Corp. mainframes.

The justification for this, according to Peeples, is that GTE's existing systems upgrade plans, such as relational and distributed databases, assume GTE systems.

GTE has four major data centers in Tampa, Fla.; Fort Wayne, Ind.; San Angelo, Texas; and Sacramento, Calif. Contel's five centers will be consolidated into the existing GTE facilities.
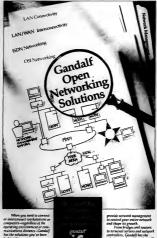
> # V
> ERY QUICKLY AND early on, we decided to be fairly arbitrary and say the GTE systems would be the surviving systems.
>
> DON PEEPLES
> GTE

Charles Achuff, director of corporate information services at Contel for the past 2½ years, said the transition teams for the corporate IS departments — they began meeting about one month after GTE and Contel announced their definitive agreement to merge last August — have worked together smoothly.

GTE and Contel's IS organizations are similar: Both have relatively small groups serving the corporate headquarters and other IS groups for the various business units. Hoppe's corporate information management staff, for example, numbers about 160 people, while Contel has about 35 people in its group.

By contrast, the IS staffs at GTE and Contel's telephone operations number 5,200 and 1,100 people, respectively.

Peeples said GTE's goal was to make "one plus one equal one," and that staffing, including IS staffing, would not increase as a result of the merger.

This policy, plus ongoing early retirement and attrition at GTE, means "we'll end up with fewer data processing staff in 1995 than we had in 1990," he said.

GTE's $6.6 billion price for Contel represents GTE's plan to issue 1.27 GTE shares of common stock (valued at $32.50 each) for 160 million Contel shares. The combined company would have annual revenue of $2.4 billion.

A more detailed report on the IS consolidation challenge resulting from this merger will appear in next week's In Depth section.

LAN • LAN-WAN • ISDN • OSI • LAN • LAN-WAN • ISDN • OSI • LAN • LAN-WAN • ISDN • OSI

Oracle addresses users' questions, complaints

BY JEAN S. BOZMAN
CW STAFF

REDWOOD CITY, Calif. — Oracle Corp. has long been known around Silicon Valley as the big "O," but now it seems the focus is on the big "Q" — quality — as well.

Stung by user criticism and the skepticism of industry analysts about the quality of Oracle software, the firm has put several programs in place to improve the quality of its software releases. Oracle Version 6.0, for example, underwent 27 maintenance changes before it was widely considered stable by users and analysts.

Recently, top Oracle executives have underlined Oracle's goal of designing software with few, if any, flaws. "We want to have zero-defect software," explained Michael Fields, president of the Oracle USA sales division. "When will we achieve zero-defect software? We're not sure. But we don't want to establish a goal that's easy to meet."

Oracle also named Ron Wohl, vice president of Oracle's Systems Product Division, as overseer of Oracle's quality assurance programs.

Last month, that quality program showed some early signs of success when Oracle received a Partnering for Total Quality Award from Sematech, the semiconductor manufacturing consortium based in Austin, Texas.

At least some industry observers said

Oracle has a lot to prove, particularly to users of Digital Equipment Corp.'s Vaxclusters, who had to wait 18 months while Oracle software engineers repaired a flawed Vaxcluster version of Oracle 6.0 [CW, March 18].

Others said Oracle's statements about quality are beginning to change the organization. "There's more seriousness about putting out a quality product and about giving it adequate testing," said

> ## THEY UNDERSTOOD
> IT was better to get a piece of software that worked well than it was to get a defective piece of software out earlier."
>
> TONY PERCY
> GARTNER GROUP

Tony Percy, a vice president of the Software Management Strategies program at the Gartner Group, Inc. in Stamford, Conn.

"I think one of the reasons Oracle 6.2 was late was that they understood it was better to get a piece of software that worked well than it was to get a defective piece of software out earlier," Percy commented.

The Vaxcluster Oracle release, Oracle 6.2, was reviewed by customers while it was still in the development and testing stages, and the initial result appears to have been greater customer satisfaction.

"I was quite surprised at how clean the code was," said James (Skip) Rochfort, manager of operations at a TRW, Inc. unit that runs three production Vaxclusters at Hanscom Air Force Base in Bedford, Mass.

The Air Force site, which participated in the beta-test program, continued to use multiple copies of the Oracle 5.1 relational database management system while waiting for Oracle 6.2.

Percy said Oracle's popularity is the result of an understanding that future revenue growth is more likely to come from its installed base than from new accounts. He said Geoff Squire, president of Oracle's worldwide sales organization, had done much to convince customers that Oracle is responding to their complaints. "We think there has been a positive trend over the last six months," Percy said.

Last year, Oracle executives were made aware of user concerns about the quality of Oracle 6.0, which was often the subject of criticism at user meetings. Oracle started a new program for user feedback, the quarterly meeting for user groups presidents, and changed the way beta-test software made its way into production tapes sent to user sites.

Stratus

gradability into the next generation." Hammonds added. "That was a big stumbling block with Hewlett-Packard [Co.] and Apollo."

Most compilers take in source code and produce object code for a specific hardware. The Stratus compiler differs by separating the code generator and optimizer from the main compiler. Sharing a common code generator and optimizer are all six languages available on the Stratus platform: Basic, C, Cobol, Fortran, Pascal and PL/1.

"Instead of having to change every language compiler, we just needed to change the code generator," said Jim Holey, director of hardware product marketing at Stratus.

By following strict source code compatibility between its Motorola and Intel microprocessors and providing cross-compilers, Stratus also enables its users to generate object code for the next generation of machines on the present ones. "If you are waiting for an XA/R Model 20, you can start compiling your applications today on the XA2000 line, and when the Model 20 comes in, all you have to do is load the files," Holey said.

Users will also be able to connect the older XA2000 line with the XA/R platform under a single system view, running parts of applications on the speedier RISC processor if they wish, Holey added.

Shifting toward an entirely RISC-based line while keeping its proprietary customers happy gives Stratus "an incredibly flexible, robust offering with a lot of choices," said Sandra Gant, an analyst with Gartner Group/Infocorp in Cupertino, Calif.

NEW PRODUCTS — SOFTWARE

Utilities

Tallgrass Technologies, Inc. has announced Filesecure Version 1.44, a software package included with its Filesecure tape backup systems.

The software was designed to facilitate backups of Novell, Inc. Netware-based network attributes such as user access rights. It includes Netware's last accessed date field, which can be used to show the last time a file was active on a network. Network managers can use this data as a means to determine which

files to archive in order to free up a file server's disk space, the vendor said.

The Filesecure storage management systems feature storage capacities ranging from 40M to 4G bytes and are priced from $495 to $4,595.

Tallgrass Technologies
11100 W. 82nd St.
Lenexa, Kan. 66214
(913) 492-6002

Amalgamated Software of North America, Inc. has announced a C language-based job-monitoring software product designed for the IBM Application System/400.

Elimin8 allows jobs to be disconnected, held or canceled in any combination for unlimited selection criteria, according to the vendor. The product also allows jobs to be selected with ge-

neric names by user profile, group profile and job name. Lists of selection criteria can be maintained in separate control files.

Prices range from $1,000 to $2,500, depending on AS/400 model.

Amalgamated Software
P.O. Box 1668
Big Bear Lake, Calif. 92315
(714) 866-9000

Capacity Plus for VSAM, a data compression tool recently released by Softworks, Inc., features advanced compression methodologies and expert system capabilities that automatically determine the optimal compression method for data that is contained in various files.

The transparent software package features Continuguard, a system designed to continuously monitor compression procedures to prevent data corruption. The product is compatible with IBM's MVS/370, MVS/XA and MVS/ESA operating systems. License fees begin at $14,500.

Softworks
7700 Old Branch Ave.
Clinton, Md. 20735
(301) 856-1892

Development tools

Siac, Inc. has announced that Flexgen Version 2.0, a Cobol applications generator for developers and end users, is available on Digital Equipment Corp. VAX/VMS and Ultrix-based systems.

The product was designed to facilitate the design of screen or form programs by providing options for color, field-entry characteristics, auto lookup windows and an autobrowse mode.
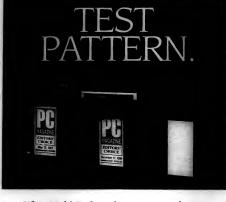
Pricing ranges from $7,000 on a Vaxstation 3100 to $67,000 for VAX 9000 versions. Pricing for Ultrix versions starts at $5,000.

Siac
1299 LaVelle Drive
Xenia, Ohio 45385
(513) 372-4334

Hewlett-Packard Co. and Tom Software, Inc. have announced a software application development tool for the Unix environment.

Application Xcellence was designed for HP 9000 Series 800 business servers and systems. It features a combination of business software and computer-aided software engineering tools as well as an application design facility that includes 13 core financial and 150 vertical application packages. A user interface that is controlled by the products process complete instead of by individual programs is also included.

Pricing ranges from $5,800 to $150,000, depending on type of platform and CPU size.

Tom Software
127 S.W. 156th St.
Seattle, Wash. 98166
(206) 246-7022

NEW PRODUCTS — HARDWARE

I/O devices

Black Box Corp.'s PQ-Pro III Card, a recently announced printer emulation card, enables twinaxial-based computers to print on an IBM Proprinter and share the printer with a personal computer.

The card was designed to emulate an IBM 4214, 5224 or 5225 printer, regardless of the type of system to which it is connected.

The product fits into the Proprinter's optional serial port slot. It began shipping last month and is priced at $895.

Black Box
P.O. Box 12800
Pittsburgh, Pa. 15241
(412) 746-5500

Identification Business' 1600C laser printer was designed for various IBM systems

The Identification Business, a division of DH Technology, Inc., has announced a continuous-form laser printer designed for IBM 3270 mainframes, System/34s, 36s, 38s or Application System/400s.

Model 1600C features more than 30 typeset style fonts and a straight-through paper path design. Other features include more than 30 built-in bar codes, 300 by 300-dot/in. resolution and a printing rate of 16 page/min. The device is plug-compatible with twinaxial or coaxial interfaces.

A standard version is priced at $7,295. An optional twinaxial or coaxial interface can be purchased for an additional $1,595.

Identification Business
18079 Edison Ave.
Chesterfield, Mo. 63005
(314) 537-8400

Data storage

Storage Dimensions, a subsidiary of Maxtor Corp., has announced an erasable optical storage subsystem designed for Silicon Graphics, Inc. Personal Iris workstations.

The X/Stor erasable optical subsystem ($7,390) features 1G- or 650M-byte removable cartridges and 35-msec average seek times.

Storage Dimensions
2145 Hamilton Ave.
San Jose, Calif. 95125
(408) 879-0300

Digital Equipment Corp. has announced the TF837, a streaming tape drive designed to perform unattended disk backups on VAX 6000 machines.

The product can reportedly back up as much as 2G bytes of data during a single shift. It can also be used for software distribution, data collection and data interchange.

The drive is based on DEC's digital storage systems interconnect technology and features a removable automatic cartridge loading magazine system.

The product lists at $18,000.

DEC
146 Main St.
Maynard, Mass. 01754
(508) 493-2143

Processors

Motorola, Inc.'s Computer Systems Division has announced reconfigured models of its Delta Series 8000 Unix-based, reduced instruction set computing (RISC)-

based systems.

The systems incorporate Motorola's M88000 RISC chip set and feature a 1G-byte disk drive in addition to 300M- and 600M-byte drives. The series includes the deskside Model 8440, the office pedestal Model 8640 and data center-size Model 8840.

Pricing ranges from $19,995 to $41,415, depending on type of model and configuration.

Motorola
Computer Systems Division
10700 N. De Anza Blvd.
Cupertino, Calif. 95014
(408) 366-4480

Ariel Corp. has introduced a development system designed for Motorola, Inc.'s 24-

bit DSP56001, a digital signal processing chip designed for Hewlett-Packard Co. 9000 Series 200/300 engineering workstations.

The DTK-300 ($4,995) fits into a single slot on a workstation and includes a digital I/O port that features a maximum synchronous data transfer rate of 6.75M bit/sec. and a digital signal processing software package.

The product also includes the DSP-300, a digital signal processing coprocessor board that yields a 3.39-msec processing speed for use in real-time signal processing applications.

Ariel
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PCs & WORKSTATIONS

COMMENTARY
James Daly

Not just a pretty face

There's nothing like the promise of money rolling in to get the creative juices flowing. That's been the lure drawing boatloads of programmers to the insanely popular Windows 3.0.

The trouble is, popularity often has no bearing on whether a product has accomplished great things. Look at the hula hoop.

For the past year, Windows 3.0 has been in the same danger of being a pretty face but a cultural void — this year's model. The recent release of an admirable series of programming tools changed all that and now gives the celebrated graphical user interface an opportunity to become more than mag wheels on the personal computer industry.

This opening up of the development environment is essential to Windows' long-term success and ultimate value to the industry. Microsoft needed to get on with the business of encouraging a more open Windows market. If it were only Microsoft's applications that had benefited from Windows — they still often take up half of the Top 10 list of best-selling Windows applications — then Windows would have ultimately failed.

IBM sticks to its guns on OS/2

BY PATRICIA KEEFE
CW STAFF

Contrary to the advice of some of its large accounts, IBM is not about to hand over the desktop to Microsoft Corp.'s Windows 3.0 operating environment.

Nor will IBM sit back and allow Microsoft to "come up with a vision of New Technology [Portable] OS/2 that we do not share," said Joseph Guglielmi, general manager of marketing and development for IBM's Personal Systems/2 family of hardware and software, in a recent interview. Should Microsoft veer from the agreed-on path for the Release 3.0 generation of OS/2, then IBM will "withdraw from that development effort"

and go its way, he asserted.

Addressing the more immediate issue, Guglielmi said, "We will not relegate OS/2 to the server. I don't agree we have lost the desktop." In fact, the optimistic former president of IBM's Application Software Division predicted that OS/2 will have the prevalent installed base over the next two to three years.

However, he acknowledged that IBM will need to overcome user "nervousness" at a perceived change in Microsoft's strategy or fidelity to OS/2. Moreover, "we need to assure that the customer can see the value [of going to OS/2]."

That value is not just a matter of having a graphical user interface on the desktop, according to

IBM. The as yet unreleased OS/2 Release 2.0 will enable users to bring together OS/2, DOS and Windows on the desktop, Guglielmi said. It will also provide users with 32-bit capabilities to which they can write application programming interfaces.

OS/2, he added, was designed for customers who need reliability, multitasking and security — all key elements for those building a set of applications on which to run their businesses. Even so, Guglielmi sees no reason to limit OS/2 to

advanced workstations. As the cost of OS/2 technology drops, so will its use move closer to the entry-level desktop, he predicted. "Our intention is to take OS/2 from where it is now and to drive it down as far as it can go," he said.

"We have taken OS/2 from the 'terrible tweak' [Release 1.2] to 1.3, which is the first release that IBM delivered by itself," he said, adding that his goal this year is to make sure that the "value story of OS/2" is made known to customers.

"We have clearly recognized that Microsoft has chosen to focus its resources on Windows, and they have every

> IBM's Guglielmi: 'I don't agree we have lost the desktop'

FEATURE: THE UPDATED MACINTOSH

Apple's future may rest in relying on its strengths

BY JOHN WEBSTER
SPECIAL TO CW

For Apple Computer, Inc., sharing the mountaintop has not been easy. Since Microsoft Corp.'s Windows 3.0 emerged last year as the industry's first serious challenge to the graphical capabilities of the Macintosh, there has been much focus on what Apple would do to counter the Windows onslaught.

While the anticipated release next month of System 7.0 — the one-year-overdue update of the Macintosh's operating system — promises to bring several eagerly awaited features to the Macintosh, develop-

ers say that Apple still needs to focus more on its clear strengths.

Industry observers say Apple's release last year of cheaper Macintoshes and the soon-to-come advent of System 7.0, together with the Macintosh's tight integration with its own graphical user interface and operating system, still give it a leg up on Windows-based personal computers when it comes to such areas as graphics and multimedia, where there is still a lot of room for sales growth.

But they also say that to thrive in such areas, Apple needs to stress its core

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Pay-up time for shareware

Guilt over unregistered shareware use was the impetus behind SPUD

BY PATRICIA KEEFE
CW STAFF

March 17 was SPUD day, in case you didn't know, and we're not talking about the butter-laced carbs St. Patrick's Day partiers wash down with green beer.

Early reports indicated that SPUD, or Shareware Pay-Up Day, was probably not as popular as was the wearing of the green. But it may pack some punch in the long run if the Association of Shareware Professionals (ASP) decides to put some effort into publicizing it as an annual event.

SPUD is the fruit of the fertile mind of shareware guru Paul Pease, a high-technology writer and planner based in Palo Alto, Calif. The idea, he said, was to

spur guilt-ridden, unregistered shareware users into writing some long overdue checks.

Pease is not talking big bucks for individual user. Shareware ranges from $10 to $200 for a full-fledged package. Some purveyors don't even charge. "There's one guy who has 'smleware.' Payment consists of smiling at someone. Another guy has 'beerware.' He only asks that you have a beer and send him a postcard saying so," Pease chuckled.

Money adds up

If enough satisfied users register after trying out their software for 30 days, it can add up to significant income for individual shareware authors.

ASP President Paul Mayer, who also heads up Zpay Payroll Systems, Inc. in St. Petersburg, Fla., said he has made enough money from shareware to quit his onetime "day job," buy a spacious house in Florida and, on some days, sit poolside answering support questions.

Data Storm Technologies, Inc., with its Procom product, and Buttonware, Inc. each had more than $3.5 million in revenue last year, Mayer added.

Successes like these come despite the fact that ASP members estimated that a paltry 1% to 10% of users of their packages ever bother to register. Users of business programs are the most likely to pay.

Until now, the ASP never

thought to designate a SPUD of its own. In fact, the group has specific rules against what Mayer calls "nagware." One such example of nagware is having a screen pop up every five

minutes demanding payment.

"Mostly what we worry about are those who do register. We want to give them the best service possible," he said. Because most shareware providers do not advertise, except through bulletin boards and the occasional shareware catalog, Mayer figures that a better product means more registrations. He will even service nonregistered users who call in with questions, reasoning that they will either register on the spot or tell their friends, some of whom might ante up.

"There's no pressure. We just hope people will respect our quality and effort and provide some reimbursement," Mayer explained.

However, SPUD has Mayer thinking.

"It was a great idea; it just needs more publicity," he said, adding that the ASP is thinking about making it an annual event.

Clone makers search for racer's edge in hardware

BY RICHARD PASTORE
CW STAFF

In these days of commodity desktop personal computers and keen competition, workers are stretching to find creative ways to differentiate their new systems. In three recent announcements, the vendors sought to add new twists with modular drive bays, user-definable BIOS and graphics enhancements.

Albert Wong, who co-founded AST Research, Inc., a pioneer of upgradable CPU architecture, is now head of start-up Amkly Systems, Inc. Because upgradable CPUs are now common, Wong is trying for differentiation with a user-removable Peripheral Platform.

The Peripheral Platform is a metal frame containing the PC's power supply and all four drive

bays. If a drive fails, users can swap in a spare, preconfigured platform and eliminate downtime to a few minutes. "Remove a few screws, and you can change the platform and motherboard in under 10 minutes," Wong said.

A less mechanical, more aesthetic distinction in the new build back panel on the bases. Rather than having the typical unfinished-looking steel back panel, Amkly designed a nice-looking back panel in case the rear of the PC is visible to workers sitting on the opposite side of the desk.

The three Amkly PCs are based on Intel Corp.'s 25-MHz i486, 33-MHz 80386 and 25-

MHz 80386 microprocessors. Each incorporates the Extended Industry Standard Architecture bus, 2M to 4M bytes of memory and Super VGA graphics. Prices, depending on hard disk, range from $5,595 to $10,595 for the

Amkly Systems' Peripheral Platform is used to allow users to replace faulty drives easily

486/25E, $4,995 to $9,595 for the 386/33E and $3,995 to $8,595 for the 386/25E.

Irvine, Calif.-based Amkly will sell the systems through the dealer and systems integrator channel.

The differentiation in Wyse Technology's new Decision PC line comes mainly in the BIOS. It offers users the ability to define system drive types (3½ in. or 5¼ in.) and set up read-only memory via the system's BIOS. Other than that, the products differ from previous Wyse PCs in their smaller chassis.

The Wyse PCs are based on the 25-MHz 486 and 20-MHz 80386SX chips. With a

110M-byte hard disk, the 386SX model costs $2,799. With a 300M-byte disk, the 486 model costs $7,199.

Epson Acesura, Inc.'s latest PC, the Equity 386SX/20 Plus, distinguishes itself by being one of the first boxes to ship with Edsun Laboratories, Inc.'s Continuous Edge Graphics (CEG) support. CEG converts digital signals to analog in order to blend color between abutting graphics pixels and eliminate the jagged edges normally found on monitor displays, according to the vendor.

The color blending results in a palette of more than 700,000 shades and an apparent resolution of 1,563 by 1,280 pixels on a standard IBM Video Graphics Array monitor.

In addition, the PC comes with the more commonplace 2M bytes of memory, 32K bytes of cache and an optional 100M-byte hard disk for $3,449.

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Multimedia in vendor sights

Enabling products on display at Microsoft-sponsored show

BY MAURA J. HARRINGTON
CW STAFF

SAN JOSE, Calif. — Several vendors sought to fill needs in the area of multimedia with product introductions at last month's Sixth International Conference and Exposition on Multimedia and CD-ROM sponsored by Microsoft Corp.

• JVC Ltd. in Japan and C-Cube Microsystems, Inc. in San Jose, Calif., announced they have defined a high-resolution extension to the Moving Pictures Experts Group (MPEG) video compression algo-

rithm. The algorithm is included in C-Cube's MPEG video decoder/processor, which debuted at the show. The MPEG processor is a single-chip product that can decompress digital video in real time, according to the company. The processor operates in two modes: the proposed standard MPEG mode and the JVC Extended Mode.

• Philips Consumer Electronics Co. in Knoxville, Tenn., demonstrated its Compact Disc-Interactive (CD-I) product. The hardware and software product, aimed at the consumer and educational markets,

was designed to be easier to use than a videocassette recorder. The hardware can be hooked up to a television and includes a 3½-in. floppy drive. It only reads CD-I or compatible discs but is already supported by Eastman Kodak Co., Online Computer Systems, Inc., Capitol Disc Interactive, GTE Imagitek and Interlight Productions, Inc., according to Philips. The product is expected to be priced at less than $1,000. No availability has been announced, but analysts speculated it could be formally introduced at the spring Comdex show in May.

• Intel Corp. released Version 2.13 of its Digital Video Interactive (DVI) system software. The release was designed to double the performance of DVI applications, running from a compact disc/read-

only memory (CD-ROM) in a 16-MHz Intel 80386SX-based computer. The upgrade is free to registered DVI developers. New users can purchase Release 2.13 for $4,500, the company said.

• Trevose, Pa.-based Protocoms Corp., an Intel DVI system software developer, introduced VideocomNV, a software product for networking DVI applications. The product allows Intel's DVI-based motion video, audio and still-image files to reside on a Novell, Inc. Netware-based file server, according to the company. The first version, due to ship June 15, will support up to five workstations and retail for $3,800.

• Panasonic Communications & Systems Co. in Secaucus, N.J., introduced a 540M-byte CD-ROM drive with an access time of between 500 and 800 msec and a maximum data transfer rate of 1.3M byte/sec.

• Chinon America, Inc.'s Information Equipment Division in Torrance, Calif., introduced a CD-ROM drive with a remote CD audio control unit and digital display built into the chassis. The drive features an average access time of 350 msec.

• Hitachi Home Electronics Corp. of America in Compton, Calif., introduced what it claims to be the fastest CD-ROM drive on the market, with an average access time of less than 340 msec. The 680M-byte drive also features an upright chassis, audio output, a life-extending sleep mode and a three-way caddy ejection, the company said. It is available immediately.

• Eastman Kodak Co., introduced two software developer's kits that enable developers to design applications with consistent photo-quality images on a personal computer. Pull kits include the Photo CD development tool kit, Photo CD accessory, the Kodak Color Management System and color data encoding metric software, called Photoyce. Photoyce helps to efficiently represent color in digital form, the company said.

IBM

right to do that," Guglielmi said. In response, IBM plans to execute a "well-defined" market strategy that will include "aggressive enhancements" to OS/2 Release 2.0 and the release of a "variety of products with client/server functionality."

He downplayed reports that IBM would spend $40 million to bolster OS/2 market share. While users will not see one big event, similar to the glitzy rollout of Windows 3.0, Guglielmi said IBM "has lots of ways to leverage what we do."

In addition to meeting with users and working with its substantial channel alternatives, one of those ways will include beefing up what Guglielmi conceded has not been a strong independent software vendor (ISV) program. Today, many developers said they have either shelved or outright abandoned OS/2 projects to work on Windows at the behest of both Microsoft and their customer base.

"We are adding resources to our ISV program now and will take a much more proactive support role with ISVs," Guglielmi said. This will include making sure developers are "educated correctly" and that they have access to IBM's OS/2 development team, as well as to the tools and developers kits that they need. "We will make sure we accommodate them."

Daly

Application builders such as Borland International's C++ Version 2.0, Purcplace Systems' ObjectWorks/Smalltalk, Jensen & Partners' Topspeed Development Environment, Tigre Object Systems' Tigre Development Environment for Windows and Gensoft's D*Base are a quantum step forward for programmers. The traditional way of putting together a Windows application was to build it piece by piece with a programming language. Until recently this language had to be C, which was the only one that worked with Microsoft's Software Development Kit (SDK), an essential foundation for building Windows applications. This is no longer the case.

The new tools allow programmers to bypass the SDK option. And that's good news not only for independent software vendors and the end users they will supply, but it gives in-house developers a lot to talk about when they gather in a few weeks at Microsoft's Corporate Developer's Tools Conferences in New York and San Jose, Calif. It is now easier than

> C LEARLY A
> GREATER breadth of
> programs would help
> Windows become the
> widespread standard
> Microsoft is hoping for.

ever for internal IS units to roll their own.

Credit for this bountiful development palette should be given to Microsoft, which could have held developers hostage to the SDK but instead shared technical details with companies creating software tools under a program called the Open Tools Strategy. For instance, Borland licensed the resource compiler and Windows header file from Microsoft and bundled them with C++ Version 2.0.

Clearly a greater breadth of programs would help Windows become the widespread standard Microsoft is hoping for. At one panel at the recent Windows & OS/2 Conference, about half the people in the audience said they were waiting for Lotus' Windows version of 1-2-3 or Wordperfect versions for Windows before adopting a Windows spreadsheet or word processor.

With the release of the new development environments, most analysts expect the number of Windows applications to at least double in the next year. For the independent vendors the good news is they have more development tools now; the bad news is the cost of entry is lower so the competition will increase.

The squeamish, however, may want to keep one eye closed until then. For the next six to eight months, expect a frenzied development environment as new tools appear and old tools become overshadowed while developers choose their favorites and de facto standards emerge.

It will be a sloppy, no-holds-barred slugfest — free market economics in all its glory. But that is all in the future. Right now, developers have a lot to talk about.

Daly is a Computerworld West Coast senior correspondent.

Despite rise of RISC, PCs remain computing keystone for engineering

BY J. A. SAVAGE
CW STAFF

SAN FRANCISCO — Reduced instruction set computing workstations may have drawn the biggest crowds of curious engineers at the recent 1991 Architectural Engineering Conference, but market share of the market, participants said.

"They're losing at workstations, but the PC platform is still the most popular," according to Terry Wohlers, president of

Wohlers Associates, an engineering consulting firm in Fort Collins, Colo. "The PC installed base is so big, and it's easy to add more stations."

Apple Computer, Inc.'s Macintosh was also seen as an option in offices already "infiltrated" with Macintoshes, said Michael Dobbins, an engineer at Lockheed Missiles & Space Co. in Sunnyvale, Calif. "It's cheaper to go to a Mac than Sun," added Saji Harstani, also a Lockheed engineer. The Lockheed office is adding software to give Macintoshes dual use — add-

ing computer-aided design (CAD) to its standard word processing functions.

Despite the PC's reputation for providing inexpensive seats, some engineers' clients are forcing them to go to Unix workstations as large engineering clients want data in a form they can use on their own workstations, according to Stephen Blodgett, an engineer at CAD/CAM & Technical Temps, a contract technical service in Oakland, Calif. However, Blodgett said, PCs are plenty powerful, and PC power is getting cheaper.

Jeff Jones, CAD specialist at Medical Planning Associates in Malibu, Calif., dissented. While the firm designs hospital floor space on PCs, Jones said he was looking into Sun Microsystems, Inc.'s workstations for higher quality graphics.

Apple

strengths — the graphical user interface and operating system — and shift hardware and peripheral development to third parties. "There's no advantage to being one against the world," says Heidi Roizen, president of T/Maker Co., a software developer in Mountain View, Calif. "There are third-party solutions that can be supplied by thousands of companies whose strengths are peripherals."

Roizen also claims that putting research and development into peripherals has delayed such crucial portions of Apple's CPU lineup as dedicated servers and notebook computers.

Analysts agree that there is room for improvement in the company's overall product strategy. "I believe that from a hardware point of view, Apple certainly is behind the curve compared to other platforms," says Ashok Jain, editor and publisher of the "Macintosh Market Report."

To really pick up steam in the future, Jain says, Apple should license its operating system to hardware vendors and capitalize on the company's strengths.

On easy street

If Apple can cite its operating system as one of its chief strengths, then System 7.0 should add even more reinforcement, developers say. Several new features should make software developers' lives easier, particularly the operating system's Data Access Manager and enhanced file sharing, according to Tony Meadow, president of

Everett, Wash.-based Macapp Developers Association, a nonprofit group of programmers using Apple's object-oriented interface development tool kit.

"What Apple is doing with the Data Access Manager is providing a standard way of accessing a relational database on a mainframe or minicomputer, and no one else is doing that. Anywhere it makes sense to access data, it will be handy. Since [database access] is so much easier now, developers will find it easier to support," Meadow says.

He says the file sharing capabilities in System 7.0 provide AppleShare file server technology in the operating system. As a result, "a file server is available on any machine, so you can develop more multiuser software."

While quick to praise the forthcoming operating system, developers still see shortcomings. Apple should address in future versions. In particular, Apple needs to work on communication between Macintoshes on AppleTalk local-area networks as well as mainframe access.

Built-in messaging, with directory services on every networked Macintosh, would pave the way for developers to create "massive group applications," says Shep Tanier, marketing manager for networked applications at CE Software, Inc. in Des Moines, Iowa. The firm's Quickmail electronic mail software is a big seller on the Macintosh.

"While messaging isn't a glaring omission in System 7.0, it would be a great leap forward and help the Mac stand out again," Tanier says.

From an end-user perspective, the Macintosh still falls short in mainframe access, "Ap-

ple needs to continue to build on its communications applications as far as accessing LAN protocols such as IBM's SNA," says John Maas, a consultant and technical specialist at Rochester, N.Y.-based Eastman Kodak Co.'s corporate IS department.

In addition, basic print functions could use an overhaul, Meadow says. "What System 7.0 doesn't have, but Apple is working on, is a new print architecture. [Currently] it's an artifact of early Macs. The printer manufacturer has to go through the hell of writing the driver. Also [needed is] memory protection, whereat each application has its own address space."

While the development community may praise the Macintosh's operating environment

and System 7.0's advances, the real test comes from end users. While the Macintosh is already popular in the publishing industry, it is also garnering praise for its strides in multimedia.

Both Microsoft and Apple have begun to define their own multimedia standards. At its Multimedia Development Conference last December, Microsoft began distributing its Windows Multimedia Development Kit and draft specifications of multimedia system software extensions for the Windows and OS/2 operating environments.

For Apple's part, the Quicktime media manager is an operating system extension expected to be released along with System 7.0 at the Worldwide Developers Conference next month.

Although both firms are pushing multimedia with fervor, some users give the nod to the Macintosh over Windows as the multimedia platform of choice.

"When I look at the state of development, Apple is the leader of the pack. They've taken integration of a number of [components] more seriously than anyone else," says Bill Sterner, manager of instructional research and user support within academic and public computing at the University of Chicago.

Sterner wants to develop multimedia applications for use as teaching tools. With Quicktime, he says, Apple has provided the system-level integration he needs to achieve his goals. "Apple is the most advanced in understanding that technology. Quicktime combined with System 7.0, Inter-Application Communications and Apple's networking approach are all pulled together without a lot of glue, as opposed to DOS."

Sterner says that multimedia users need either an Intel Corp. 80386-based PC or a Motorola, Inc. 68030-based Macintosh, which gives the Macintosh a better shot at making the final cut in many companies by eliminating the huge base of Intel 80286-based machines.

Meadows adds most developers would agree that the Macintosh is still ahead of Windows in multimedia development. "Quicktime is a complete architecture for handling media, and since the Mac was designed and conceived as a whole, and Windows sits over clunky DOS, Apple has the advantage," he says.

Webster is a free-lance writer based in San Francisco.

Home sweet PC

On the computer industry horizon, the most tantalizing dream remains the personal computer that functions as an easy-to-use home appliance. Microsoft Chairman Bill Gates, for one, is publicly primed to usher in the development of such a machine, and most industry observers agree that the home area is a logical place for a growth explosion in computing.

For the Macintosh, the concept of using computers as a home appliance is still far off, says Tony Meadow of the Macapp Developers Association: "There's still not any compelling reason why the average housewife would want to buy a computer. Maybe when ISDN and fiber optics are installed in a majority of houses, all this might make more sense."

Tim Bajarin, executive vice president of market research firm Creative Strategies Research International, Inc. in Santa Clara, Calif., says that Apple eventually plans to make more of a move into the home-appliance arena, but probably not with a Macintosh. "[Apple Chairman John] Sculley talks about doing things in consumer market, but it won't be a low-cost Mac. He's moving in that direction, but it will be a new box that might look more like a television."

JOHN WEBSTER

Macintosh power takes off with Rocket

Radius' accelerator card uses multitasking to boost processing speed

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — Radius, Inc. has unveiled a series of hardware and software offerings that will be welcome news to Apple Computer, Inc. Macintosh owners looking to squeeze more performance out of their machines.

Last week, the company announced the Rocket, a CPU accelerator card that adds computational muscle to the Macintosh II family. The Motorola, Inc. 25-MHz 68040-based Rocket speeds application processing with a design that creates a multitasking environment where the Rocket and Macintosh CPU share tasks.

The multitasking design splits up the work to maximize system resources, allowing the Macintosh CPU to handle certain low-level tasks while the Rocket processes the higher level tasks. For instance, if a video

application can add stereo sound to accompanying animation, the package could use Rocket to display the video and the Macintosh processor to play the sound.

Rocket comes with an assortment of Radius software packages and is available now for $3,295. A logic board upgrade for the Apple IIFX sells for $3,999.

Radius also recently announced the 15-in. Color Pivot display monitor, which rotates to display documents either horizontally or vertically. The monitor features 1,152 by 882 lines of resolution and costs $1,995.

The Color Pivot may be configured with either the Macintosh SI and IICI built-in video or a Color Pivot interface. Color Pivot interfaces are available for the Macintosh SE/30, the Macintosh IILC, and all Nubus Macintoshes for $795.

Another recent by-product of

the firm's technological fervor is Impresarii, software for the compression, storage and decompression of still images. This compression slows still images to be reduced for easier storage, manipulation and transmission while maintaining image quality, and then expanded to color publishing systems. Impresarii is available now for $179.

Radius is also likely to benefit from a new wave of beneficence coming from Apple. Sources within Apple say that Chief Executive Officer John Sculley has moved to improve his rocky relations with third-party developers. Although Apple was planning to introduce a 21-in. color monitor this summer for about $4,000, the company realigned plans when Apple monitor makers such as Radius and Supermac Technology began to complain. Sources within Apple say the monitor will still ship on schedule but only outside the U.S.

Computervision clasps CAD

BY SALLY CUSACK
CW STAFF

BEDFORD, Mass. — Computervision, a Prime Computer, Inc. company, announced a three-axis surface machining package that can accept computer-aided design (CAD) geometry from virtually any CAD package for the market today.
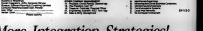
Called Personal Machinist Universal, the software is available in versions for Intel Corp. 80386 and 1486 DOS-based machines and the Sun Microsystems, Inc. Sparcstation platform under Unix.

Targeted at automotive, mold-making and aerospace applications, the package accepts geometry from any CAD program that can generate an Initial Graphics Exchange Specification or Data Exchange Format.

Ed Sierolawski, engineering supervisor at American Tool and Mold, Inc. in St. Joseph, Mich., said the company has been using the Computervision Personal

Design and Personal Machinist products for more than one year.

"The staff is especially happy with the speed offered in the latest version of PM-SD," he said. American Tool is running the software on a mix of Intel 80386- and 1486-based machines over a Network File System networking environment. The company provides die cast mold designs primarily for the automotive industry.

The software's CAD capabilities reportedly include three-dimensional wire-frame modeling, Bezier surfaces, surface intersections and shaded pictures.

Volume shipments are scheduled to begin this month, with prices starting at $9,900.

In a related item, Computervision also announced a 37% price reduction and the addition of solid modeling capabilities to its core Caddis 4X CAD software program. The core Caddis 4X product, called Solid Designer, has been reduced from $24,500 to $15,500.

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Dbase IV: Feature-rich, slower than others

Ashton-Tate's Dbase IV Version 1.1

Reviewers	Ease of use	Data integrity	Multiuser support	Performance	Application development	Documentation	Service & support	Value	Score
Infoworld 11/12/90	Very good	Very good	Good	Poor	Good	Very good	Satisfactory	Good	5.7*
PC Week 12/10/90	Satisfactory	Needs improvement	Good	Needs improvement	Good	NC	NC	NC	Good DBMS, but slow
PC Magazine 10/16/90	Bugs are fixed	NC	NC	Better, faster	Enhanced	NC	NC	NC	Poorer, more stable

Users
- Peter Minnehim, Gerber Travel
- Terry Liznn, Pacific System Design Workshop
- Michael Irwin, Washington, D.C. Metro Police Department

Analysts
- Adam Green, Adam Green Seminars, Inc.
- Dean Hiller, D.L. Hiller & Associates
- Jerry Cerra, Trailhnear Microcomputer Reports

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. *Infoworld score based on 1 to 10 ratings where 10 is excellent. NC: No comment

Key: ■ Very good ■ Good ■ Fair ■ Poor

Technology Analysis — A roundup of expert opinions on new products. Summary written by free-lance writer Suzanne Weixel.

Ashton-Tate Corp.'s Dbase IV Version 1.1 goes a long way toward re-establishing Dbase as a flexible, bug-free and feature-rich program. However, given the advancements the competition has made in the meantime, reviewers wonder if it is too little, too late.

Ease of use: Features such as the Control Center menu system and the QBE module make the program easier to use than earlier versions. Still, there is no support for a mouse in either operation or in target applications and, as *Infoworld* points out, integration among features such as SQL and Dbase modes is rough.

Data integrity: Dbase IV Version 1.1 includes many features to ensure data integrity, such as automatic file and record locking, multiuser password security, data encryption and transaction logging. However, reviewers say these features are sometimes awkward to use. For instance, *Infoworld* notes that the undo feature is only available before you move off the current record and that the programmer is responsible for maintaining data integrity by editing or deleting linked files. *PC Week* says the lack of restrictions on what can be entered into a database jeopardizes data integrity in interactive use.

Multiuser support: Reviewers praise Version 1.1 for features that simplify its use in a local-area network, particularly its file and record locking capabilities. But *PC Week* says data sharing is inconvenient because many functions, such as packing, must be accomplished manually.

Performance: At best, reviewers say Dbase IV Version 1.1 performs moderately well; at worst, *Infoworld* says it is intolerably slow in a multiuser environment. However, Version 1.1 is faster than 1.0, thanks to a dynamic memory management system that lowers memory requirements to 450K bytes. The package also includes an integrated disk cache that can store files in random-access memory as well as access extended or expanded memory.

There are also some built-in tools for tweaking performance. For instance, users can specify the percentage of available memory used for application space vs. the amount used for overlay swapping. Developers can fine-tune the automatically generated Dbase language code. The new query-by-example module makes it easier to access data, although it does nothing to speed up querying.

Applications development: The development environment is one of Dbase's strongest areas. The programming language supports Microsoft Corp.'s Windows, pop-up and pull-down menus and pick lists. There is also support for SQL, although two separate modes of operation are required. Programming is enhanced by new features such as the ability to update a record from an array and save a screen to memory, perform another task and then restore the screen. There are also fewer restrictions in this version on what can be done with user-defined functions.

Documentation: The many manuals that come with Dbase IV are thorough, but they lack a comprehensive index. Also, instead of updating them for Version 1.1, Ashton-Tate opted to include a Change Booklet, which only adds to the confusion.

Service and support: Although Ashton-Tate's free technical support is considered knowledgeable and helpful, it is not toll-free, and the lines are often busy.

Value: The reviewers' consensus is that Dbase IV Version 1.1 is the product that should have been released two years ago. The standard edition costs the standard Dbase price of $795. The Developer's Edition, which includes utilities for debugging, customizing the application generator and distributing a run-time system, costs $1,295.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance	Average
Peter Rogers, Robertson, Stephens & Co.			
W. Christopher Mortensen, Alex. Brown & Sons			

Ashton-Tate reported a net loss of $18.1 million for 1990. For 1989, the company reported a net loss of $28.6 million.

> "DBASE IS NEVER going to be the fastest product on the market. But if you want to work with it, you can get almost any level of performance."
>
> Terry Liznn
> Principal
> Pacific System Design Workshop, Inc.

Ashton-Tate responds

Comments from Julie Cox, product manager for Dbase IV for DOS:

Data integrity: It is possible to impose restrictions on what can be entered into a form by storing rules for data entry within the form itself.

Multiuser support: Certain functions, such as packing, are deliberately made a bit more difficult to perform. Packing involves destroying data.

Performance: Dbase IV was not designed to be a speed demon; it was designed to be productive. Sometimes, features that make it more productive increase the overhead.

Applications development: SQL and Dbase modes are separate so that each language can be used for the applications it suits best.

Documentation: In the future, the documentation will be updated with the program.

Service and support: To improve the response time, a dial-in computerized system for the most frequently asked questions has been implemented.

Value: Now that the Dbase engine is squared away, we are in a position to deliver products that meet the users' needs in a timely way.

NEXT WEEK

▶ Borland International, Inc.'s Paradox 3.5 is a pricey upgrade with few new features. But new memory management makes it go VROOMM.

NEW PRODUCTS

Systems

Bristol Research Corp. has introduced a 20-in.-deep NEMA 12/4 rack-mountable computer.

The BRC 9400 was designed to withstand shock, vibration and wide temperature fluctuations that occur in industrial environments. The system can be configured with IBM Personal Computer AT-compatible Intel Corp. 80286- or 80386-based CPU cards.

A version that includes a 25-MHz CPU, a 1.44M-byte floppy disk drive, a 40M-byte hard drive, an IBM Video Graphics Array driver and 1M byte of random-access memory is priced at $5,500.
Bristol Research
1000 Brioso Drive
Costa Mesa, Calif. 92627
(714) 642-3373

Leading Technology, Inc. has announced the 9000LT, a laptop computer that includes a 12-MHz Intel Corp. 80C286 processor equipped with 1M byte of memory.

Other features include a built-in 3¼-in. floppy drive and a 16-gray-scale, backlit screen. The product can operate for more than three hours on a single battery charge, the vendor said.

The product costs $1,699.
Leading Technology
10430 S.W. Fifth St.
Beaverton, Ore. 97005
(503) 646-3424

Software applications packages

Istex Solutions, Inc. has announced an enhanced version of Forecast that was designed for users of Lotus Development Corp.'s 1-2-3 Release 3.1.

Forecast-GFX ($145) features forecasting techniques such as time series analysis, multiple regression analysis, seasonal adjustments, smoothing, filtering and descriptive statistics. The product enables users to integrate graphs into a worksheet and display them on the same screen, according to the vendor.

The software package requires an IBM Personal Computer XT, AT, Personal System/2 or compatible running DOS Version 2.0 or higher.
Istex Solutions
161 Highland Ave.
Needham, Mass. 02194
(617) 449-6222

Calera Recognition Systems, Inc. has announced an optical character recognition system designed for the Microsoft Corp. Windows 3.0 environment.

Topscan Plus can be configured with Calera's CDP 6000 or CDP 9000 scanners. Both scanners feature scanning times up to 3.3 sec./page, character recognition rates of up to 250 char./sec. and a mean-time-between-failure rating of 10 million pages.

Topscan Plus requires an IBM Personal Computer equipped with 2M bytes of random-access memory, Windows 3.0 and a hard disk. Pricing for a system that includes a CDP 6000 is priced at $17,450; a version configured with a CDP 9000 costs $29,450.
Calera Recognition Systems
2500 Augustine Drive
Santa Clara, Calif. 95054
(408) 986-8006

Aria Systems' Imagit Flash Filing, an electronic document management software package designed for small businesses, runs under Microsoft Corp.'s Windows 3.0 with off-the-shelf IBM Personal Computer AT or compatible hardware.

The product includes a software compression/decompression routine for compressing or decompressing document images and features storage capacity for up to legal size (8½- by 14-in.) documents.

Imagit Flash Filing operates with Precision Software's Superbase database software package. Pricing begins at $599.
Aria Systems
4842 Smick St.
Philadelphia, Pa. 19127
(215) 483-3929

Alcom Corp.'s Lanfax Redirector for Windows features Fax Manager, a graphical user interface that enables local-area network users to send faxes directly from any printable Microsoft Corp. Windows application in the Windows 3.0 environment.

The product runs in Novell, Inc., 3Com Corp., Banyan Systems, Inc. or IBM Netbios environments.

Pricing for Lanfax Redirector begins at $995.
Alcom
2464 Embarcadero Way
Palo Alto, Calif. 94303
(415) 493-3800

Business Resource Software, Inc. has announced a software program that enables users of IBM Personal Computer XTs, ATs or compatibles to get a step-by-step guide for creating business plans.

Plan Write includes an integrated outliner, an interactive word processor and a spreadsheet processor designed for documenting business plans. Features include movable, sizable windows, which are used to copy information among plans, and edit, cut and paste commands that fa-

cilitate the initial formation of business plans.

The product began shipping this month and is priced at $199.
Business Software
2013 Wells Branch Pkwy.
Austin, Texas 78728
(512) 251-7541

Compete is a multidimensional financial modeling software package that Computer Associates International, Inc. acquired from Manageware, Inc.

Compete enables portions of data files, such as financials over time or financials by product, to be viewed instantly. CA also announced that it plans to release an enhanced version, CA-Compete Version 4.2, this month. The enhanced product is priced at $995.
CA
711 Stewart Ave.
Garden City, N.Y. 11530
(516) 227-3300

Powercore, Inc.'s Network Scheduler II Windows Interface was designed to work with Version 1.5 or higher of Powercore's Network Scheduler II, a scheduling program designed for use by work groups operating on a local-area network.

The interface enables Network Scheduler II users to gain access to Network Scheduler II's calendar data while remaining in the Windows environment. The product also allows multiple Network Scheduler II calendars to be opened simultaneously and permits file transfers between Network Scheduler II and other Windows-compatible applications, the vendor said.

The Network Scheduler II Windows Interface is priced at $595 per network server.
Powercore
One Diversatech Drive
Manteno, Ill. 60950
(815) 468-3737

Molecular Design Ltd. has introduced a chemical drawing package designed to facilitate the drawing of chemical structures, reactions or other scientific presentations within a Microsoft Corp. Windows-based environment.

ISIS/Draw reportedly enables scientists to insert structures and reactions into their word processing, spreadsheet or other application programs. Structures and images can also be moved on different platforms running ISIS/Draw, according to the vendor.

A single-user license for ISIS/Draw is priced at $495.
Molecular Design
2132 Farallon Drive
San Leandro, Calif. 94577
(415) 895-1313

Software utilities

Davinci Graphics, Inc. has announced Version 2.0 of the Rasterpro 720 Penless Plotter, a software tool designed for plot-intensive computer-aided design environments.

The product consists of three utilities: Procontrol, a menu-driven, MS-DOS-based software package that allows users to set up plotter output specifications from their workstations; Proadj, a software driver for MS-DOS systems that enables files to be plotted from within Autodesk, Inc. Autocad applications; and Proip, a firmware utility that allows both DOS and non-DOS users to create A- and

B-size plots of any length.

A basic version of the product is priced at $3,495.
Davinci Graphics
870 Hermosa Ave.
Sunnyvale, Calif. 94086
(408) 737-8800

Peripherals

Interface Electronics, Inc. has announced a parallel print coprocessor that consists of a microprocessor-based I/O card that fits into an 8- or 16-bit slot of an XT/AT bus-based personal computer.

The Starboard Port accepts print data at an 8-bit bus speed from a PC or file server, thereby enabling the PC to be used by the operator while the port con-

tinues to communicate with the printer, the vendor said.

The product is priced at $199.
Interface Electronics
4579 Abbotts Bridge Road
Duluth, Ga. 30136
(404) 623-1066

Radius, Inc. has announced an IBM Micro Channel Architecture interface designed for use with its 19- and 21-in. Radius Two Page Display Systems for personal computers.

The TPD2/PC-MCA enables IBM Personal System/2 users to view high-resolution, two-page, paper-white displays. The interface features 1,280- by 960-pixel resolution and incorporates an IBM Video Graphics Array chip.

The product costs $895.
Radius
1710 Fortune Drive
San Jose, Calif. 95131
(408) 434-1010

Suncom Technologies has announced Icontroller, a cursor control device that can be attached to the side of a laptop computer.

The device features three function buttons, optional cursor speeds and compatibility with Microsoft Corp.'s Windows software packages.

The product is priced at $99.95.
Suncom Technologies
6400 W. Gross Point Road
Niles, Ill. 60648
(708) 647-4040

HOW OTHERS SEE THE MACINTOSH-TO-MAINFRAME CONNECTION.

HOW AVATAR SEES IT.

When it comes to system integration, you don't have to treat the Mac differently than any other device on your network. Introducing the MacMainFrame Series, the broadest range of Macintosh-to-mainframe connectivity options available.

MORE CHOICES. MORE SOLUTIONS.

Now, in an integrated set of solutions, local or remote Mac users in Token Ring, SDLC or coax environments can tap centralized information to make every Mac user's desktop more powerful.

MacMainFrame distributes terminal emulation, file transfer, printer emulation and mainframe

graphics across a wide variety of networking schemes.

Since it's fully AppleTalk compatible, EtherTalk, Token-Talk and LocalTalk networks are part of the solution, too.

For customization, there's Avatar's Programmer's Toolkit, a full range of Applications Programming Interface (API) tools. For example, Avatar's Hypercard API has been used to develop a front end system to PROFS, IBM's electronic mail system.

THE MACMAINFRAME DIFFERENCE.

Unlike some Mac-to-mainframe connections, MacMainFrame enhances the benefits of the

Macintosh user experience.

Since MacMainFrame is completely IBM 3270 compatible, it has no impact on normal mainframe operations. The result? An integrated working environment that increases productivity and reduces headaches.

SOMETHING ELSE WE SEE. SERVICE.

With eight years of experience, Avatar offers something beyond products and technology. It's called responsiveness. You see, as the 3270 connectivity specialists, we have helped to integrate Macintosh computers and PC printers into many different en-

vironments. Which means we can do the same for you. With a single integrated set of solutions for Token Ring, SDLC, and coax, both standalone and via gateway.

To find out how, call this number toll free at

1-800-289-2526.

You'll find that we understand Macintosh-to-mainframe connectivity like no one else. So as your network options continue to grow, Avatar can help you see the forest through the trees.

Avatar

65 South Street, Hopkinton, MA 01748

NETWORKING

COMMENTARY
Bruce Sanders

The human side of E-mail

Electronic mail is fine for the ply exchanging information. But the functions of E-mail are changing. Increasingly, members of work groups are using E-mail to collaborate. Even though working at different times and in different places, team members can address problems and make decisions more quickly because of computerized message exchanges.

Whenever people successfully collaborate, whether with or without E-mail, they persuade each other. They exert influence as they define the problems facing the team, identify what it will take to solve the problems and determine who will take what actions. However, persuasion is quite different when the teams in your organization communicate screen-to-screen rather than face-to-face. Those who excel with this new kind of teamwork will keep in mind the basics of effective persuasion, which consist of building trust with the people you want to influence, asking clearly for what you want, motivating others into action and showing the way.

The greater the trust, the more willing people are to take risks. Therefore, to be successful at influence, build a climate in which the targets of your influence trust you.

The problem is that we're accustomed to building trust through a handshake, a look directly in the eye, a pat on the back and all the other proofs of face-to-face meetings. We're deprived of that with E-mail.

User work bears fruit on Vines

Network Applications Consortium testing Banyan version of Notes

BY JOANIE M. WEXLER
CW STAFF

Not even two months after its formal inception, the Network Applications Consortium is nearing the first fruit of its mission to spur commercial applications development for enterprisewide networks.

The 40-firm consortium's steering committee — which comprises representatives from six large companies — is approximately two weeks into testing a version of Lotus Development Corp.'s Notes 2.0 specifically developed for the Banyan Systems, Inc. Virtual Networking System (Vines) network operating system.

Pacific Gas & Electric Co., a large Vines and Notes user — got the application developed ball rolling when it approached Lotus last year to develop a Vines version of Notes and realized that the need for a broader choice of Vines applications was shared by others.

As a result, other steering committee firms now intercommunicating via Notes-for-Vines are the Arizona Public Service Co., MCI Telecommunications Corp., Pennsylvania Blue Shield and The Turner Corp.

"Notes represents our first victory in working with vendors to get an application better integrated with Vines," commented

John Ryan, director of systems engineering at Compaq Computer Corp. in Houston and a steering committee member.

Ryan explained that since Notes was natively optimized for servers running the Microsoft Corp. OS/2 and Windows operating systems, and Banyan servers are Unix-based, "Notes performance lagged. Now that Notes is tied to Banyan Sockets [software that links applications with Transmission Control Protocol/Internet Protocol, the typical communications protocols used in Unix networks], we'll get higher performance."

On-line with Vines

Currently, all firms in the Network Applications Consortium run Vines networks, which were architected from the ground up

by Banyan to address corporatewide networking. All 40 companies will be on-line with the Vines-based Notes within three months, according to Ryan.

Notes is a sophisticated bulletin board-like application that integrates databases, electronic mail, file transfer and communication functions into one environment.

"It will take an application this hot to push our organization into the next generation of networked machines," commented Bill Sheehan, director of information systems at the Metropolitan District Commission, a government Vines site in financially strapped Massachusetts.

Sheehan explained that his myriad Intel Corp. multiprocessor-based PCs "will run until they die. So the next hardware platform change will have to give the taxpayers something very good for their money. A groupware application that really boosts our productivity — like Notes — could do it."

Dallas firm practices law of the LAN

ON SITE

BY MICHAEL FITZGERALD
CW STAFF

DALLAS — While Johnson & Gibbs, P.C. lays claim to being the leading Dallas law firm in terms of size, it could also be considered a leader in its field in terms of networking technology.

The firm was an early adopter of local-area networks, buying Novell, Inc.'s first networking box, the Motorola, Inc. 68000-based Starl box in 1985. That box supported 24 workstations, and the firm would patch Arcnet adapters into it for a time.

Today, the firm has 575 personal computers and five file servers, all IBM clones, running on a Novell NetWare 386 network with The Network Archi-

vist from Palindrome Corp. serving as tape backup, solving some nagging problems for the firm.

There has been no looking back.

"The network [has] had an enormous impact," said J. Warren Huff, a firm shareholder and chairman of the technology committee, which was formed in 1984 to explore alternatives to centralized, minicomputer-based word processors.

"From a cold business standpoint, the simplest way I can explain it is that at the time of network, we had a large word processing center that did almost all of the documents, and we also had secretaries for al-

most all the lawyers, who couldn't be productive at all because they were not involved [in document production]."

Huff cited billing integration and electronic mail as other major advantages. The network has also saved the firm money.

"Our managing director believes that we paid for our system in about 18 months in just hard cost savings, before you factor in all the benefits of being more efficient," Huff said. "It's such a cost-effective way to deal with the process. On a per-workstation basis, it looked to me that the mini was about twice as much, for comparable performance."

Bruce Hatch, Johnson & Gibbs' systems administrator, said the firm is still enhancing the network. Most recently, replacing an Emerald Systems Corp. 1200M-byte tape backup system with the one from Palindrome has brought surprising benefits, he said.

The backup system offers better security than the tape-based systems the firm used before because it does not involve tape changes, Hatch said. The Emerald system needed four tape changes each night.

Hatch credited The Network Archivist with being more adaptable to the users as well. Attorneys need access to numerous versions of the same document to compare language and changes. Hatch said that the Palindrome backup method has proven more efficient in viewing old versions of documents.

BIT BLAST
Frame-relay service on tap

Nationwide fiber-optic network services provider Wiltel, a subsidiary of The Williams Cos., last week rolled out a public frame-relay service based on fast-packet multiplexers from Stratacom, Inc. Wiltel reportedly installed eight initial Stratacom nodes; its Wipak frame-relay service offers users a range of speeds from 64K to 1.024M bit/sec. Frame relay is a fast-packet technology that allows streamlined packet switching of sporadic data traffic.

A Switched Multimegabit Data Services (SMDS) interface linking Cisco Systems, Inc. routers to wide-area networks at T3 (45M bit/sec.) speeds is reportedly under construction by Cisco and NEC America, Inc.'s Switching Systems Division. The interface will consist of routing software from Cisco on a NEC adapter card and is targeted at users looking to use their routers to link local-area networks over SMDS. SMDS is a high-speed, fiber-based digital network service emerging from the regional Bell operating companies.

A volume discount incentive program for colleges and universities from FTP Software, Inc. delivers discounts on Transmission Control Protocol/Internet Protocol (TCP/IP) software of up to 50% off regular site license list prices. The program also includes reduced pricing on annual maintenance fees and support for multiple interfaces at no additional cost. Discounts apply to the academic version of PC/TCP Plus, FTP's TCP/IP implementation for MS-DOS-based systems.

Reportedly freeing up as much as 580K bytes of memory on an Intel Corp. 80286-based computer, Digital Communications Associates, Inc. is bundling Helix Software Co.'s Netroom memory relief software with its Ethernet network adapter cards at no extra charge.

Soft-Switch unwraps E-mail monitor system

BY ELSABETH HORWITT
CW STAFF

WAYNE, Pa. — Information systems managers who are tired of learning about electronic mail system failures from irate users may welcome a multivendor E-mail monitoring system announced recently by Soft-Switch, Inc.

Mail Monitor is a hardware/software solution that is said to pinpoint systems that are not receiving or sending E-mail across an enterprisewide heterogeneous network. The system can be programmed to send out probes to various E-mail servers at regular intervals and will provide the user with color-coded alerts when a given node has not responded within a set period of time, according to Soft-Switch product manager Stuart Finn.

Beginning with Mail Monitor's expected release this summer, the vendor plans a slow rollout of support for most of the 50 E-mail systems that are now supported by Soft-Switch's E-mail connectivity software. These will include E-mail products from IBM and Digital Equipment Corp., as well as leading local-area network E-mail systems, E-mail services such as MCI Communications Corp.'s MCI Mail and systems based on the CCITT X.400 standard, Finn said.

Active management
At present, Carmody's group tends to find out about problems "only after they have escalated to the point of being a real issue," he added. Robm & Haas plans to be one of Mail Monitor's first beta-test users.

Mail Monitor addresses a

need for E-mail management that has burgeoned as "messaging has proliferated and become a valuable asset" said Walter Ulrich, a director at Arthur D. Little, Inc. in Los Angeles. The system will only work with Soft-Switch's E-mail products; however, most Fortune 500 companies with enterprisewide E-mail systems are Soft-Switch users, Ulrich said.

Say it with pictures
Mail Monitor allows users to graphically depict enterprisewide networks and zoom in on specific nodes, Finn said. The system also collects and correlates performance information such as how long it takes a message to traverse the network and servers' performance over time for later analysis, he added.

Mail Monitor requires installation of Soft-Switch Central, IBM host software that acts as a hub for different E-mail systems. Priced at $15,000; Central will soon run on Unix systems as well, Soft-Switch said.

Mail Monitor's $40,000 price tag includes an Intel Corp. 1486-based workstation running Microsoft Corp.'s Windows 3.0, Mail Monitor software, a hard disk, tape backup and 2,400 bit/sec. modem.

PC maker Everex jumps into networking market

BY JIM NASH
CW STAFF

Does the world need another network operating system? Two companies, personal computer maker Everex Systems, Inc. and network software developer Webcorp, think so.

The two San Francisco-based firms announced last week that they are shipping Everex-Web, a work group-level, peer-to-peer system aimed at small businesses or small corporate departments. A spokesman for Everex said the company sees a market for three- to 10-work group settings that cannot afford Novell, Inc.'s Netware Version 2.2.

Bill Kalff, director of National Gypsum International in Point Richmond, Calif., said the new system is viable. "I've looked at the Novell and [Arinsoft, Inc.] Lantastic network operating system, and I found Web the most user-friendly."

"There certainly is a niche for really small network operating systems today," said Tom Wood, an analyst at Business Research Group in Newton, Mass. But Wood said, Novell and networking competitor Microsoft Corp. are both working to lower prices and increase capabilities for work-group networks. To the extent that they are successful, he said, companies such as Everex and Webcorp will be forced out of the market.

"It's crazy, if you ask me," Wood said of their long-term chance for success. Everex-Web is being shipped with Everex Speedlink adapter cards and as independent software in five-, 15- and 30-user versions. Prices range from $495 to $1,495. Everex said its system is compatible with Novell's Internet Packet Exchange protocol and will offer migration up to Netware.

"Web is a lot easier to install than [Novell's entry-level] Netware," said Chris Valnius, principal at The Jupiter Group, a research firm in Fairfax, Calif. He oversaw beta testing of Everex-Web at Jupiter and said installation took "an hour or two."

"This is a good product for

Dallas

"We find that we can restore maybe 20 different versions of a file," he said. "If an attorney wants to know what it looked like 17 days ago, we can do that."

The firm is also removing a mission-critical application, its conflict-of-interest system, from an IBM System/34 and placing it on a local-area network. A conflict-of-interest check is necessary every time the firm considers doing new work, for both existing and potential clients.

Hatch said the decision to switch to a network-based system from the System/34 came because of the extremely limited capabilities of the old minicomputer's database, written in RPG.

The conflicts system just got second-tier resellers to sell," Valnius said. "For those developers or value-added resellers who don't want to invest in three or more employees needed to support Netware," he said, this is an option.

Kalff said he has 10 IBM or close workstations in his Point Richmond office, three in Dallas and six in Miami.

too slow, too cumbersome and inaccurate," Hatch said.

The programming is being done in Advanced Revelation from Revelation Technologies, Inc. and is essentially finished.

One minicomputer remains at the firm: a Wang Laboratories, Inc. VS system with some 10 terminals attached. The Wang system handles billing for the firm.

According to Hatch, it performs well and is integrated into the network, which allows attorneys to easily review and customize client bills.

Hatch said that while "someday, we'll be entirely on networks," the Wang system is very effective, and there is currently no software available for PCs or networks that does what it does.

In addition, Johnson & Gibbs recently finished installing a 56K bit/sec. wide-area network linking the Dallas office with its offices in Washington, D.C., Austin, Texas, and Houston.

These three sites have 50 to 70 node workstations each. Hatch said the WAN was installed to allow employees at each site to send electronic mail, transfer documents and install software remotely. Hatch also manages the network from his office in Dallas.

The firm is now deciding what software packages it will use as standards. Hatch said many attorneys use Wordperfect Corp.'s Library as a menu program, but the firm will standardize on Wordperfect Office 3.0 because

JOHNSON & GIBBS formed a technology committee in 1984 to explore alternatives to centralized, minicomputer-based word processors.

of its calendaring and electronic Rolodex functions.

For spreadsheets, the field is considered to be wide open. Users have Lotus Development Corp.'s 1-2-3 in versions up to 3.1 installed in the accounting department, but Borland International, Inc.'s Quattro Pro and Wordperfect's Planperfect are also in use.

Hatch will also line up any online service that attorneys want. Lexis, Compuserve, West Law (a database service from West Publishing) and Information America are among the most frequently used.

At some point today, you're likely to hear someone utter the cry of defeat below.

The only question is, how many times? You may hear it ricochet through the corridors

of your company. You may hear it from a supplier or competitor. And be careful. Let

your guard down and you may hear it from the most damning place of all. Yourself.

Impossible. The early warning sign of submission and surrender. A sign you're talking

IMPOSSIBLE.

to the wrong person at the wrong company. Should you hear this word or any

of its malignant offspring—unfeasible, impractical, incompatible, unsolvable,

insurmountable—stop everything. And do whatever it takes to eradicate their

prefixes. By all means, understand the meaning of the word. But never forget that

success belongs to those who consistently refuse to accept it. The difference between

what can't be and what can be has absolutely nothing to do with the problem itself.

And everything to do with the manner in which you go about solving it.

Attack a problem with persistence, determination and inspired thinking and you

will solve it. No matter how many people before you tried and failed. Believe that

no problem is impossible and no problem will be. The only thing that should ever be

impossible is believing anything is impossible. Get so busy solving a problem you have

POSSIBLE.

no time to realize how Herculean it may be. There are two kinds of people. Those

who will tell you all the reasons something can't be done. And those who simply go

out and do it. It should be obvious where we stand. Notice that our company logo

sits squarely at the bottom of this page. Not the other one. We believe that

nothing is impossible. And when you have 40,000 employees

around the world who believe that too, then nothing is.

Worldwide
Information
Systems

Bull ♣

We solve the toughest problems in the world.

Sanders

Moreover, what work team members say via E-mail often isn't wholly consistent with what they say in face-to-face meetings and in telephone conversations.

Some people react to E-mail by becoming much more adventuresome than in those other contacts. At the worst, they'll use the computer as a cloak to hide behind, making promises they won't keep or even insulting other team members.

By and large, though, the danger is in the other direction. Most people exercise too much caution in their E-mail correspondence. They feel they're more likely to be held fully accountable for their E-mail comments than for their face-to-face comments, so their business courage fades away when they're at the computer.

To maintain the trust important for influence, resist any urge to become either reckless or feckless in your E-mail messages. Also, make sure your work team trusts the computer system's security. Password protection and data encryption capabilities help. So does the ability, like that in Da Vinci E-mail and Wordperfect Office, to specify whether the message you're sending to a particular person can or cannot be picked up by a third party if your intended recipient isn't available.

Once you've established trust, ask for what you want, stating your request clearly.

Clear requests also help maintain trust. Because the people receiving your E-mail messages aren't there with you at the time, doubts can build about what you really mean. Researchers have long recognized how much energy is spent by people in organizations trying to read into messages what the sender truly wants. Not surprisingly, the real meaning often gets distorted by this speculation.

When you interact via E-mail, you often must probe your team members for their motivations because you may not have the chance to interact with them. Look for patterns in their messages and their responses as to what energizes them into action.

A software capability that helps in this search is message threading, with which you can trace the train of an E-mail conversation to spot a person's interests.

Another helpful feature is the capability to search E-mail messages by content. In this way, you can check out the hunches you formed from reviewing the message thread. Many E-mail packages have at least one of these two capabilities. Higgins from Enable Software, The Network Courier from Consumers Software, Office Works from Data Access, Da Vinci E-mail and Framework III LAN from Ashton-Tate each have both.

Once you've identified the interests, needs and desires of your targets of influence, focus your arguments on those areas. With the massive amounts of information hitting every work team member, the people you want to influence may not have even spotted how your suggestions can benefit them. So tell them as effectively as you can, via E-mail. When identical text will go out to a group of people, or if you don't yet know your targets of influence well, order your arguments based on your experiences with relative appeal of the arguments in similar situations.

Be a living example of what you are asking others to do. You want others to stay open to being influenced by your ideas. So use your E-mail messages to demonstrate how you are open to influence by the good ideas of your colleagues.

Join with your teammates to show one another the value of E-mail for persuasion. In doing so, you'll be guiding others in your organization to use E-mail as well. Information management professionals traditionally have had the opportunities and responsibility to provide that sort of leadership. The challenge is especially appealing in this case because E-mail can be a most influential business tool.

Sanders is a psychologist at Workgroup Associates in Vacaville, Calif.

3Com presents 16-bit 10Base-T card

BY JIM NASH
CW STAFF

SANTA CLARA, Calif. — Recognizing the growing importance of 10Base-T for high-volume local-area networking, 3Com Corp. announced a 16-bit Ethernet adapter card for systems networked with unshielded twisted-pair wiring.

3Com already has 16-bit Ethernet cards for thin and thick coaxial cable networks. A 3Com spokeswoman said the new product, Etherlink 16 TP, is aimed at financial transaction processing firms and other organizations needing to send files across personal computer networks without investing in coaxial cabling.

Each Etherlink 16 TP costs $479; five cost $2,195. It features zero-wait-state random-access memory to cut access time.

One network manager said the card boosted his system's performance. Claude King, senior systems programmer at the University of Florida in Gainesville, said he has yet to run extensive tests, but users noted the faster response time.

"Users generally notice when response time increases 30% or more," said King, who manages the College of Journalism and Communications. He explained that the 16-bit card "moved the [throughput] bottleneck to the server." However, given its ability to reconfigure most servers for more performance, King does not expect problems.

Twisted pair is making a strong showing among network managers who either want to retain their investment in existing 10Base-T equipment or who want the flexibility of twisted pair's star topology, said Eric Buck, vice president and financial analyst at Donaldson, Lufkin & Jeanette, Inc. in New York. "The twisted-pair market is a hot segment of marketplace," he said.

An information systems manager at First National Bank of Chicago who requested anonymity said the bank is making a greater commitment to the Ethernet networks it has as its trading floor. In such an environment, the manager said, twisted pair's flexibility combined with 16-bit throughput makes it safer to build on 10Base-T networks.

Bob Willis, systems development officer at Security Pacific National Bank in Los Angeles, said he is using Pair Tamers, an early proprietary coaxial-twisted-pair adapter from 3Com. The devices, hooked up to the bank's 3+ Open LAN Manager Version 1.1 networks, cause tie-ups when traffic builds on the network, Willis said. Security Pacific will probably upgrade to adapter boards in its PCs this year and will look at the Etherlink 16 TP.

DCE plan introduced

SAN JOSE, Calif. — A blueprint for yet another distributed computing environment was announced by five Transmission Control Protocol/Internet Protocol vendors at the recent Sun Microsystems, Inc. Connectathon conference.

FTP Software, Inc., Intercon Systems Corp., Interlink Computer Sciences, Inc., TGV, Inc. and Beame & Whiteside Software Ltd. said they will co-develop applications around Sun's Remote Procedure Calls (RPC). RPC is a modular set of networking protocols and services that allows distributed application processing across mixed-vendor networks.

Sun's widespread technology was rejected by the Open Software Foundation (OSF) last May for the RPC portion of its Distributed Computing Environment. OSF's rival is the race to provide the industry with "open" computing. Unix International, is also developing a distributed platform, and vendors such as Digital Equipment Corp. with its Network Application Support are honing their own versions.

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NEW PRODUCTS

Local-area networking software

Trellis has announced a bulletin board software package designed exclusively for Banyan Systems, Inc. Virtual Networking Software operating systems.

Tackboard Version 3.0 ($1,495) functions as an enterprisewide bulletin board for public communications and workgroup discussions.

The product enables users with appropriate access to post text messages created within Tackboard or data imported from DOS files, the vendor said. In addition, a scripting utility allows users to upload or download information to Tackboard.

Trellis
85 Main St.
Hopkinton, Mass. 01748
(508) 435-3066

Hughes LAN Systems, Inc. has announced Version 2.0 of Proline, an integrated local-area network connectivity software package that allows DOS and Microsoft Corp. Windows 3.0 systems to concurrently access multiple hosts, file servers and network operating systems.

Features include support for the Sim-ple Network Management Protocol and Network Driver Interface Specification-compliant token-ring adapters and multiprotocol interoperability between token-ring and Ethernet networks.

The product is scheduled to be available this month and is priced at $595.

Hughes LAN Systems
1225 Charleston Road
Mountain View, Calif. 94043
(415) 966-7300

Electronic mail

CE Software, Inc. has aired an enhanced version of its electronic mail system for Apple Computer, Inc. Macintoshes.

Quickmail Version 2.5 supports personal computers and Macintosh systems in a PC-based local-area network environment that supports Apple File Protocol-compatible file services. The product also includes a Starnine Technologies, Inc. gateway to Novell, Inc. Netware Message Handling System.

A second-quarter ship date is scheduled. Pricing for Macintosh, PC LAN and AppleTalk versions ranges from $100 to $2,500, depending on number of users.

CE Software
1801 Industrial Circle
West Des Moines, Iowa 50265
(515) 224-1995

Front ends, multiplexers

Data Switch Corp. has announced two channel extension products designed to allow multiple mainframe channels to communicate with peripherals via high-speed communications lines.

The Model 9200 and Model 9400 Channelplexers both operate transparently to computer channels. Both models also feature a data compression technique designed to conserve bandwidth, according to the vendor.

Pricing for the Model 9200 starts at $70,000 per link. The Model 9400 is initially priced at $105,000 per link.

Data Switch
1 Enterprise Drive
Shelton, Conn. 06484
(203) 926-1801

Micro-to-host

Netmanage, Inc. has announced a Transmission Control Protocol/Internet Protocol (TCP/IP) network communications stack designed for Microsoft Corp.'s Windows 3.0 environment.

Newt ($500) includes a software development kit for Windows 3.0 developers and enables multiple concurrent sessions to be performed with multiple hosts. It features support for token-ring and Ethernet local-area networks.

According to the vendor, the product can also communicate with any host system running TCP/IP, including Digital Equipment Corp.'s VMS- and Ultrix-based machines, The Santa Cruz Operations' Unix-based systems, Sun Microsystems, Inc. workstations running SunOS and IBM AIX-, VM- and MVS-based computers.

Netmanage
10920 N. De Anza Blvd.
Cupertino, Calif. 95014
(408) 257-6404

Ohio Software, Inc. has announced an asynchronous communications software program designed for IBM and Microsoft Corp.'s OS/2 Presentation Manager environment.

Split Line ($295) complies with IBM's Common User Access and Systems Application Architecture guidelines. The product reportedly allows three communication sessions to operate and transfer files simultaneously. Files can be transferred at a maximum rate of 19.2K bit/sec., according to the vendor. Support for Kermit, Xmodem and Ymodem protocols is also featured.

System requirements include an IBM Personal System/2 Model 50 equipped with a minimum of 2M bytes of memory and OS/2 Version 1.2 or higher.

Ohio Software
8111 Timberlodge Trail
Dayton, Ohio 45458
(513) 434-8668

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Raymond J. Sibiga has been elected vice president of information services at Arkwright Mutual Insurance Co., a risk management services firm based in Waltham, Mass.

Sibiga had been assistant vice president and manager of systems and programming at Arkwright since 1987. He was named assistant vice president of information systems in 1984 after Arkwright's merger with Philadelphia Manufacturers Mutual Insurance Co. in Valley Forge, Pa.

At Philadelphia Manufacturers Mutual, Sibiga was vice president of insurance services for two years.

Before that, Sibiga served as director of insurance information services at Aetna Life and Casualty Co. in Hartford, Conn., for 12 years.

Sibiga holds a bachelor's degree in business administration from the University of New Haven in Connecticut.

Arthur E. Weiss has been appointed to the new position of director of MIS at Nationwide Cellular Service, Inc., a reseller and distributor of cellular telephone service and equipment in Valley Stream, N.Y.

Weiss is responsible for coordinating all IS operations and overseeing Nationwide's 15-person MIS department.

Weiss had been project manager at Avnet, Inc.'s IS division for the past seven years. Before that, he worked as a senior systems analyst at Diplomat Electronics.

Weiss holds a bachelor's degree in engineering from Columbia University.

Robert M. Garrant has been named director of consulting services at General Technical Services, Inc. in Columbia, Md.

Garrant has 17 years of IS experience with the U.S. Army, RCA Corp., First Interstate Bank of California and Maryland National Bank.

The road to lower fuel costs

Trucking companies use IS to monitor fuel purchasing and reduce waste

BY CARMEN J. WISEMAN
SPECIAL TO CW

Fuel is the lifeblood of the trucking industry. Without a steady fuel supply, the big rigs quickly grind to a halt. But maintaining financial balance while keeping trucks filled can be a dicey proposition for transportation companies.

Fuel costs typically represent 18% to 35% of a carrier's operating expenses. Because the cost of a barrel of benchmark light, sweet crude is subject to wild fluctuations in supply, demand and market value, these costs are a major X factor in profitability projections.

That's why the big carriers are increasingly having to information systems to streamline fuel purchases, control vehicle refueling or cut down on fuel waste caused by poor driver or vehicle performance.

Plugged in to prices

In the last 10 years, "carriers have become very sophisticated in the way they buy fuel," says Dave Willis, senior vice president of the American Trucking Association Foundation in Alexandria, Va. Almost all of the major carriers, for example, have at least a modem and a personal computer dedicated to dialing into fuel companies and obtaining comparative pricing data.

Other firms, Willis adds, pull oil and diesel futures markets via comput-

er links. They buy fuel every day, monitoring quotes by way of computer.

J. B. Hunt, Inc. in Lowell, Ark., is one of the largest truckload carriers in the U.S. with revenue of $580 million. The company treasurer has several IBM PCs hooked into the fuel commodity markets, according to Thomas Sanderson, vice president of marketing services at the firm. By monitoring these markets on a minute-by-minute basis, the company can hold costs down when it buys fuel in bulk for its pumps across the country.

The system also allows J. B. Hunt to pass on the right fuel surcharge to its customers, Sanderson adds. Using pricing data gathered daily from the

commodity markets and the Interstate Commerce Commission fuel index, the company can tailor surcharges to individual customers on a percent-per-mile basis every week.

Roadway Express, Inc., a less-than-truckload subsidiary of $3 billion Roadway Services, Inc. in Akron, Ohio, also supplies its own pumps at more than 650 facilities nationwide. Roadway Express' fuel pricing system, in place for about four years, has made replenishing supplies at these facilities faster and

The pain of business redesign

BY MICHAEL L. SULLIVAN-TRAINOR
CW STAFF

Business process redesign is a catchy buzzword and a noble goal, but in reality it can be a gut-wrenching experience for many companies.

"The coin in which you pay for re-engineering is denominated in units of suffering," consultant Michael Hammer told 1,200 insurance industry information systems professionals at the recent Life Office Management Association (LOMA) Systems Conference in Orlando, Fla.

Hammer, president of Hammer & Co. in Cambridge, Mass., said insurance is the industry most committed to re-engineering the business. However, he added that few industries were in more desperate need of reshaping.

Most efforts to redesign business within the industry have fallen short of

true re-engineering because they did not change the way business was done but merely applied technology to old processes.

"We've inherited a business organization that can't be fixed; it has to be eliminated," Hammer said. "The main problem with people who are trying to do re-engineering is that they aren't ready for the chaos of massive change."

Mutual Benefit Life Insurance Co. and United Services Automobile Association were cited for pioneering efforts to redesign the business.

Mutual Benefit reduced policy processing time from 25 days to four hours by replacing clerks who processed individual aspects of an insurance application with a case manager dealing with all aspects

of the application.

As a consequence, however, a new level of position had to be created for the case managers, upsetting the company's organizational hierarchy.

Hammer is calling for insurance industry changes

"The compensation system did not allow for case managers. They saved the company with this process change but destroyed the organization," Hammer said. "Process redesign is the start of re-engineering. Everything has to change in response to that."

Although many redesign projects start out with the goal of process improvement, they ultimately become driven by cost reduction, similar to older process automation approaches, said Thomas Davenport of Ernst & Young's case Center for Information Technology in Boston.

BOOK REVIEWS

Tracing the trials and triumphs of a time-honored family

IBM's 360 and 370 Systems
By Emerson W. Pugh, Lyle R. Johnson
and John H. Palmer
The MIT Press, $37.50

After almost 27 years, the IBM 360-370 architecture processors still weigh in as the computer industry's undisputed heavyweight champ. For those with an interest in the formative years of the processors — including the internal politics surrounding the 360, private IBM documents and a detailed discussion of the hardware designs — this book has the answers.

The authors relate how, by 1961, IBM's products consisted of a large number of incompatible systems ranging from punch-card electronic accounting machines to supercomputers. That year, Vin Learson, who later became IBM's chief executive officer, established a task force to address "the *explosive growth* in applied programming demanded by a larger number of dissimilar systems." The 360 architecture emerged; development on it began in 1962.

That was a good thing for IBM, because within two years, the firm was under competitive siege from the BUNCH companies. In response, IBM rushed to announce the System/360 in 1964 for delivery in 1965.

The authors explain that the 360 hardware achieved many of its original goals, but the software was a different story. Operating system OS/360 exploded into incompatible control programs such as Basic Programming Support and Basic Operating System.

The book goes beyond the technical ins and outs of these processors and introduces more than 100 people who designed and built the 360s. Further, the authors document many struggles that took place over the 360. "We somehow have an organization that destroys more men than it produces," former IBM Chairman Tom Watson wrote in a draft copy of an internal memo, one of many private IBM documents provided by the authors.

The personal touches are welcome, but this book is long at 848 pages. Some chapters overlap, and readers learn more than they may want to about core memories or punch-card accounting.

While the book does not give the full story of the 360/370 — from the labs to the field to the customer to the consumer, from the effect of IBM to the impact on the industry and society — it does provide a scholarly start.

GEORGE MCQUILKEN

AI for the masses

The Age of Intelligent Machines
By Raymond Kurzweil
The MIT Press, $39.95

Information systems managers interested only in the immediately practical side of computing should look elsewhere rather than wade through *The Age of Intelligent Machines*. But Kurzweil's 450-page chronicle of artificial intelligence is not the college textbook it resembles.

Machines is provocative and entertaining reading. In witty, anecdotal style, Kurzweil follows AI through its philosophical origins and mathematical and mechanical roots, arriving at today's work on expert systems. The author predicts dates for future AI milestones and offers his vision of a society significantly changed by these advances.

Each section includes essays and stories from AI luminaries. Some are far afield, but on the whole, they enhance the thought-provoking quality of the book.

DEREK SLATER

A door to open systems

Open Systems: A Business Strategy for the 1990s
By Pamela Gray
McGraw-Hill, $40.95

If your information systems department is pushing for open systems but is receiving no understanding from above, you might do well to slip a copy of *Open Systems* onto the boss' desk.

This book examines the importance and implications of open systems to the business community. In the first eight chapters, questions on who needs standards, types of standards and how they are created are answered, and Gray has kept the text simple and easy to read, given the weighty topic. The boss can stop reading at page 166. For the techies, the second half of the book delves more deeply into topics such as data handling, user interface and security.

ALAN J. RYAN

McQuilken, president of Coleman Corp. in Marblehead, Mass., is a former editor of the IBM System Journal. Slater is a Computerworld staff member. Ryan is a senior writer, features.

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Trucking

more cost-effective, says Helene Cavany, director of applications development at the company's Summit Information Services subsidiary.

When a facility runs low and needs to order fuel, an operator at Roadway Express' Akron headquarters enters the facility's location number in a database on the company's IBM 3090 mainframe. The system immediately gives the most recent bids for an average of six vendors at each location.

In the bad old days of manual posting, Cavany says, the process was limited to two vendors for each location. Merely recording all the bid information took 12 hours per day.

Trucking companies that don't maintain an extensive network of refueling stations across the U.S. still need to get the best prices for diesel bought on the road. Leaseway Trucking in Beachwood, Ohio, keeps costs in check with a centralized road fuel purchasing system called Fuelbank.

J. B. Hunt's Sanderson: When prices are high, manage fuel economy at the driver level

an extensive network of refueling stations

"Fuelbank lets you control where and how much drivers can purchase," says Chris Wolfe, director of business IS at the multimillion dollar firm. "It helps keep waste and theft to a minimum."

With their Fuelbank credit cards, Leaseway's 10,000 drivers can buy fuel at a network of authorized truck stops equipped with point-of-sale devices that are tied into a third-party data collection system.

Fuelbank, which cost about $1 million to develop, has paid for itself, thanks to discounts achieved by purchasing road fuel in volume and to tighter controls over what drivers spend on their routes. Wolfe estimates that Fuelbank has trimmed overall road fuel costs by 10% and has also saved money by reducing theft, waste and accounting hassles.

More and more carriers are using on-board computers to act on drivers whose driving styles waste fuel and to assess differences between the fuel economy of individual trucks.

"When prices are high, you have to manage fuel economy at the driver level," Sanderson says. That's why his company

Shaping the future

Fuel efficiency is a major force in truck sales, with growing emphasis on aerodynamic design, says Ron Glotzbach, director of engineering planning and support for Navistar International Transportation Corp., a truck manufacturer in Fort Wayne, Ind.

To create fuel-efficient truck designs, Navistar uses McDonnell Douglas Computer Systems Co.'s Unigraphics computer-aided design and manufacturing (CAD/CAM) software on a Digital Equipment Corp. VAX workstation. The truck cab must be a standard shape, but the CAD/CAM system lets Navistar add designer touches, including fuel-saving aerodynamic elements, to the basic model.

In the early 1970s, Glotzbach notes, a typical highway tractor trailer hauling 73,000 pounds at 55 miles per hour had a fuel efficiency of about 4.6 miles

uses on-board electronic monitors to determine the percentage of time drivers spend idling, speeding or going too slow, all of which waste fuel.

Moreover, at least 20% of the trucks in the U.S. now link these on-board monitors to satellite tracking systems, according to Ashok Boghani, a consultant at Arthur D. Little, Inc. in Cambridge, Mass.

"Every tenth of a mile per gallon gained in fuel economy is worth about $130,000 to $140,000 a month on our bottom line," Sanderson explains.

Schneider National, Inc., a truckload carrier in Green Bay, Wis., recently

per gallon. Aerodynamic design has played a major role in increasing today's fuel efficiency to 7.8 miles per gallon.

So why aren't more trucks with sloping noses and wind-deflector panels out on the road? Fuel savings (aerodynamic structures) get in the way of service, and fitting an engine powerful enough to run a truck under an aerodynamically sloping cab front can be a problem, Glotzbach says.

Navistar's Glotzbach looks for fuel efficiency

"The challenge," he notes, "is to provide fuel efficiency and aerodynamic design while balancing customers' demands" for easily serviced trucks or ones that run a long time without service.

merged its on-board trip recorder technology with a Qualcomm, Inc. satellite system, says Don Sellers, Schneider's vice president of IS. The company can monitor about 6,000 trucks and 7,500 drivers in real time.

Sellers noted Schneider has realized fuel savings ranging from 5% to 7% with the on-board recorders.

IS must keep an eye on trucking

What-if planning may be the new wave of distribution decision-making, but so far, it has barely scratched the surface of the trucking industry.

Warren Powell, associate professor of civil engineering and operations research at Princeton University in Princeton, N.J., has developed Super/sip, an optimization-based what-if planning tool to help companies minimize costs, including fuel. As fuel prices increase, this decision-making tool adjusts all costs of running a trucking company accordingly, including those associated with customer service and hauling empty trucks.

However, the real fuel savings, some industry watchers say, will come when trucking companies integrate these executive decision-making systems with logistics, tracking and dispatch systems.

Woman is a free-lance writer based in Watertown, Mass.

CIO careers more lucrative, but risky

BY CLINTON WILDER
CW STAFF

AMELIA ISLAND, Fla. — If you are a chief information officer, the good news is you can make more money during the next few years — perhaps more than you ever thought possible.

The bad news is you are much more likely to get fired.

The rapid elevation of the information systems function has made the profession both more lucrative and more volatile, said Thomas J. Friel, a Menlo Park, Calif.-based managing partner at executive search firm Hedrick and Struggles, Inc. at *CIO* magazine's recent Perspectives conference.

Salaries for top IS talent have the potential to double or even triple over the next few years, Friel said, but executives may have to switch companies to attract them. "Insiders, many of

whom have labored faithfully for years in IS, will not be automatically promoted," he said.

Many prominent IS executives have switched companies and industries during the past few months. In the most recent example that raised many eyebrows, Allen Ditchfield left MCI Communications Corp. for the top IS job at Cleveland-based insurance company Progressive

Corp. (CW, March 4).

What makes an IS superstar who can command the big bucks? According to Friel, the key is simply "leadership and the proven ability to use technology to make money."

Texas Instruments, Inc.'s Chief John W. White, who shared a career-oriented panel with Friel, had a slightly different view. He said the critical success factor is using information technology to reduce cycle times in product development, distribution logistics or virtually any business process.

White also contended that rotating through non-IS functions is an important path to successful IS leadership and should be done early in one's career. "I think you need to move around and develop a broader base of experience," he said.

-Robert V. Zimmerman,
Manager of Information Systems Technology,
California State Automobile Association

TI's Whites *"I think you need to move around and develop a broader base of experience"*

White spent his first eight years at TI on the technical product staff, left the company to work for four years at two computer services firms and then returned to TI as manager of information services in 1973.

Stuart R. L. Smith, head of IS in the chemicals and polymers division of ICI Ltd. in the UK, said he spent part of his career "trading blows with the British version of the Teamsters" in a factory line management position. "You shouldn't do it just for the exposure but to actually succeed and be promoted within that line function," he said.

Friel likened the ongoing evolution of IS management to that of financial management in U.S. companies since World War II. The chief financial officer position gradually evolved from nonexistent to the vice presidential suite. Now, he noted, companies are required by the Securities and Exchange Commission to have the position as a signatory to financial statements, and the CFO job can be a path to chief executive officer.

Following the same pattern, Friel predicted that more CIOs will become CEOs in the years ahead. "Along with the trauma of increased pressure on CIOs, there is also the opportunity to move up and out of the position," he said. "For those who can adapt and make money by applying technology, the future is very bright indeed."

Weather Service systems get mixed reviews

Expert panel praises technology but denounces implementation, management and cost

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — An independent panel of experts has given mixed reviews to the massive overhaul of the National Weather Service's forecasting systems, promising many of the technological underpinnings but urging stronger management and additional funding.

A committee of the National Research Council, an arm of the National Academy of Sciences, said it was favorably impressed with a prototype of the new Advanced Weather Interactive Processing System (AWIPS) but expressed concern over the "steady slippage" in its implementation schedule, now about two years behind original projections.

The 10-year, $3 billion effort combines and graphically displays weather observations from several sources and is the chief impediment to be used by meteorologists at regional forecast offices. AWIPS is key to the Weather Service's effort to reduce labor costs by automating much of what forecasters currently do manually.

Staff reductions

The Weather Service hopes to reduce staffing at the forecast centers to a single meteorologist on the night shift. That plan assumes the meteorologist will concentrate on 12-hour forecasts during times of severe weather while the balance of the standard 48-hour forecast is produced automatically by supercomputers in Washington. The committee's report

> S UPERCOMPUTERS are better than humans at processing the vast amounts of data needed for long-range forecasts, while people do a better job at short-term predictions.
>
> ELBERT W. FRIDAY
> NATIONAL WEATHER SERVICE

called that an "untested and questionable idea."

Weather Service director Elbert W. Friday agreed the concept needs to be tested. He said supercomputers are better than humans at processing the vast amounts of data needed for long-range forecasts, while people do a better job at short-term predictions, with the "crossover point" now at about 72 hours. He said that as weather models steadily improve, the crossover point is moving backward, and the Weather Service hopes to be able to rely on automated forecasts

for 36 hours and beyond.

The panel praised the Next Generation Weather Radar (Nexrad) project for the reliability of its hardware — super-accurate Doppler radars — but said its software was flawed in its ability to detect and measure hail and to detect rapidly rotating storms that sometimes turn into tornadoes.

Excellent prospects

Testifying two weeks ago at a congressional hearing, Gary Castle, a senior official at the National Oceanic and Atmospheric Administration (NOAA) said, "The prospects for the Nexrad technology look excellent." However, he said, the Nexrad software contained substantial deficiencies, and the government was "seriously

Forecasting terms

- **Nexrad:** Next Generation Weather Radar, to be used by the National Weather Service, the Federal Aviation Administration and the U.S. Department of Defense, will replace 1950s-era radar with sophisticated Doppler radar. Doppler radar units are able to measure precipitation and detect the rotational patterns of violent storms.
- **ASOS:** Automated Surface Observation Systems will automate the manual collection of surface weather data such as rainfall, temperature and wind speed through a nationwide network of smart sensors at airports and elsewhere.
- **GOES Next:** The next generation of Geostationary Operational Environmental Satellites will offer several times greater resolution than existing satellites for precise tracking of severe weather.
- **AWIPS:** The nerve center of the regional forecasting offices, the Advanced Weather Interactive Processing System will integrate and display data from Nexrad, ASOS and GOES Next while providing interactive tools for preparing forecasts.

contemplating" termination of the contract with Nexrad contractor Unisys Corp. The National Weather Service is a unit of NOAA, which is part of the U.S. Department of Commerce.

The Weather Service modernization effort continues to have very serious cost, performance and schedule problems," said Commerce Department inspector general Frank DeGeorge, who also testified at the hearing. He said the project is likely to need at least $500 million more than is now budgeted.

It may be a bargain even at that price. Independent studies have estimated that more accurate and timely forecasts could

save the U.S. billions of dollars annually in damage to property and crops.

Rep. James H. Scheuer (D-N.Y.) said the Weather Service should not be blamed for all the delays in the modernization program. He said the Office of Management and Budget had halted portions of the project several times and had cut funds for AWIPS to the point that it is out of phase with the rest of the modernization program.

The National Research Council committee also gave the Weather Service a mixed review for its implementation methods. It praised the service for employing a number of innovative procedures and said its use of prototyping and

user involvement have reduced risk.

But the committee said it was concerned that project management, engineering and support staff "may not be as strong as required for an effort of this magnitude." It also said the Weather Service lacks overall plans and standards for configuration control and for the development and maintenance of complex software.

"We're taking this very seriously," Friday said. He agreed that management had been a little less but was getting beefed up. He also said the Weather Service is increasingly turning to automated tools for help. A new project management system now keeps track of 10,000 tasks, a number he said will "multiply manyfold."

We make it happen

INTEGRATION STRATEGIES

Linking LANs: Payoffs, pitfalls, pathways

BY JULIA KING
SPECIAL TO CW

I f Pennsylvania Blue Shield hadn't moved to distributed data processing over a corporate LAN last August, network planner Mike Kinsey figures that he would probably have had to approach his boss two, maybe three, times by now seeking more money for additional mainframe memory. "The boss," Kinsey declares, "would have had me for lunch."

Today, Kinsey remains unconsumed. As for Blue Shield, the Camp Hill, Pa.-based health insurer has saved "hundreds of thousands" of dollars in mainframe upgrades. It has also achieved any-to-any connectivity across all of its diverse computing platforms.

The firm's reach now extends to state and national Blue Shield networks via wide-area links on its new token-ring local-area network.

This level of network integration didn't come altogether effortlessly, however. First came turf wars with information systems personnel, who resisted the idea of operating around centralized computing assets.

Next came the lengthy process of choosing a LAN operating system. Consensus among the separate IS groups that support the company's four business units was neither quickly nor easily won. Everyone wanted something different.

Then there were the battles with operating systems vendors, all of which wanted exclusive presence on Blue Shield's network.

"Banyan [Systems, Inc.], Novell, [Inc.] and 3Com [Corp.] — they all want to be the only game in town," Kinsey says. "They want you to go with their hardware, their software, their utilities. They have to come around to the idea that they can be only a piece of the corporation."

Blue Shield's experiences offer near-perfect textbook examples of the organizational and technical challenges of integrating LANs. They also illustrate some of the biggest payoffs — reduced costs and boosted efficiency — that most companies attain only after negotiating a number of common integration pitfalls.

Because of these pitfalls, experienced IS managers, vendors and consultants caution that organizations shouldn't expect to create a seamless communications infrastructure overnight.

Rather, experts say network integration is evolving slowly. For many, large-scale implementation will begin in three or four years, when more LAN-based applications software and more sophisticated network management tools are available.

"For the next five years at least, separate networks will exist unless something pretty thunderous happens," predicts Janet Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass.

"LAN internetworks, which are typically separate from [IBM's] Systems Network Architecture networks, are being built but in a haphazard way with very little planning or coordination," she adds.

One reason for this is the lack of a unified architecture to allow everything to work together, says Jan Kennedy, vice president at the information industry practice of Booz, Allen & Hamilton in Washington, D.C. In its absence, "LAN integration is more hype than actuality," he says.

Still, there are users making integration efforts that are starting

Crucible forges strong links

LAN-to-WAN connection keeps steel moving and users smiling

INTEGRATING
LOCAL-AREA
NETWORKS
Crucible
Service Centers

BY BARBARA FRANCETT
SPECIAL TO CW

L ike any good company in the steel business, Crucible Service Centers, a specialty steel distributor, knows that saving small scraps can really add up.

Later this month, the Camillus, N.Y.-based firm will finish installing a new, multivendor LAN-to-WAN network at the last of its 18 U.S. sales and distribution sites. The integrated system has already shaved 36 seconds from the average order-entry response time, yielding an annual companywide savings of up to 35,360 hours, according to Ted Furtch, director of MIS.

"We've had big gains in speed and efficiency," says John P. Armbruster, district manager at the New England facility in Auburn, Mass., the second Crucible site to receive the new system. He reports a daily savings of between two and three hours.

Switching from an IBM 4361 host and on-site IBM 8100s lets Crucible distribution centers quickly share sales history, inventory and order-entry applications while still enjoying host access via an existing IBM Systems Network Architecture (SNA) wide-area network, Furtch says.

The new local-area network-based system, called XL-2000, includes AT&T Intel Corp. 80286-based desktop workstations linked to AT&T 33-MHz and 25-MHz file servers and Novell, Inc. Netware Version 2.15 running over unshielded (twisted pair), all connected to an existing WAN (see details page 72).

Outdated environment

One of seven divisions of Crucible Materials Corp. headquartered in Solvay, N.Y., Crucible Service Centers nationwide were sharing an IBM 4361 host with the company's Specialty Metals Division. "It was always a distributed processing environment," Furtch says, but one badly in need of updating.

In the past, users often had to wait up to 40 seconds for their system to handle a transaction. Now, Furtch says, the average response time is between three and four seconds.

Those time savings add up to one hour per user per day, or about 680 work weeks per year.

Under the old system, inquiry and sales history reports were generated at a central site, then sent to the districts. "We wanted to do all order-entry tasks at the district level, including inventory, sales information, and entering and processing orders and

Crucible's Furtch: LAN-to-WAN network saves 680 work weeks per year

PAYOFFS

to pay off in the form of cost savings, improved response times and shorter application development cycles.

One of these companies is Owens Corning Fiberglas Corp., which has tied together multiple Ethernet LANs and its IBM mainframe computers in a corporatewide token-ring network.

In doing so, the Toledo, Ohio-based company has eliminated the need for pricey front-end controllers and has cut overall network response time from six seconds to between one and two seconds, according to lead systems analyst Steve Poesler.

"Now that pretty much everything is LAN-attached, we're providing more information across more user platforms," Poesler says. In addition to applications such as electronic mail and word processing, application development has also been moved onto the network.

The ability to transfer applications and development tools from central IS departments to end users is a big benefit of network integration, says John Vlcek, president of US Connect, a partnership of 16 regional network integrators.

The arrangement not only puts information in the hands of those who use it most frequently but also works to reduce application development time.

"The typical corporation has a three-to-four-year backlog for application development," Vlcek says. "You just don't have to wait three years to put in a LAN."

Once an integrated network is in place and software tools are made available, the expectation is that work groups will come up with their own applications, says Ken Nedzel, a senior manager at Ernst & Young in Cambridge, Mass. "You can

think of LAN internetworking as an enabler of applications," he says. "An integrated network buys you the advantage of not having to justify the technology cost of every application opportunity."

Prime payoffs

At American Sterilizer Co. in Pittsburgh, MIS Director John Cianella counts better applications development among the chief payoffs of his company's integration work so far.

"What we have now is the ability to develop new applications without getting tied into the mainframe architecture," he says. "Applications are still developed by MIS and aren't turned out any faster, but they are better engineered."

Another advantage of network integration is the geographic freedom it allows work groups. For example, at Pacific Gas & Electric Co., LANs tied into wide-area facilities link more than 12,000

workers over a 90,000 sq-mile area. This allows people in different locations to work on the same project.

Moving computing resources closer to network-attached end-user workstations also can save money — a lot of it. Cianella says he was able to keep American Sterilizer's 1990 data processing costs at 1984 levels by converting traditional mainframe-based applications, such as accounting and payroll, to the network.

Cost pressures also prompted Columbia Pictures Entertainment in Burbank, Calif., to integrate its existing IBM, Wang Laboratories, Inc. and Digital Equipment Corp. workstations, says Charles Winning, manager of technical and network services. The company is now exploring wide-area network-to-LAN connections at other sites. ■

King is a free-lance technology writer based in Holley Park, Pa.

Integration of PC LANs on a corporate backbone network is of strategic importance to our company

Source: Business Research Group
CW Chart: Doreen St. John

+ On the plus side
− On the minus side

Source: CW Research
CW Chart: Doreen St. John

PITFALLS
Links: Trickier than you think

BY JULIA KING
SPECIAL TO CW

Don't be fooled: Incorporating local-area networks into your integration strategy can be only slightly easier than hand delivering every file yourself — and about as much fun.

Experienced users and consultants caution the naive that creating a successfully integrated LAN goes far beyond hooking into wide-area networks. There are many large pitfalls to beware:

• **Immature LAN software.** "One of the biggest problems is that software technology hasn't moved along to support certain LAN applications over a wide-area network," notes Art Beckman, manager of information technology services at Pacific Gas & Electric Co. (PG&E).

"A database designed for a file server on a 10M-byte LAN may be great for a small group," he says, "but if you put it out on a WAN, which can be a 9.6K bit/sec. to 56K bit/sec. line, it goes from being a great application to a poor response application."

Steve Poesler, a systems analyst at Owens Corning Fiberglas Corp., whose nationwide network contains some 700 LAN/WAN tie-ins, adds, "File-transfer applications, which tend to be large-volume traffic senders and receivers, especially bog down the network." Nevertheless, he says, "The trade-off is still there in terms of connectivity."

• **Bandwidth limitations.** Even within a building or campus, it's impossible to make high-speed connections between all LANs because the network can operate at speeds from 9.6K to 10M bit/sec.

To minimize these problems, PG&E has established a LAN/WAN standards

committee that has established LAN standards and purchasing guidelines for the company's various departments.

• **Lack of standard mainframe gateways.** Even after physical network connection issues are addressed, there is a limit to the kinds of applications users can place on the network. This is primarily a result of the absence of standard gateways between LAN and mainframe operating systems.

At Pennsylvania Blue Shield, for example, LAN users lack an electronic mail capability because the E-mail software is mainframe-based. The company is now shopping for a LAN-based E-mail system as well as a means of linking it to the mainframe E-mail in place, says Mike Kinney, a network planner at the insurer.

According to Howard Frank, chairman of Network Management, Inc., a Fairfax, Va.-based firm specializing in network integration, the nearly ubiquitous presence of mainframe-based software is one of the biggest obstacles to network integration.

"There is a giant amount of mainframe software around, and people just can't go off and redevelop it," Frank says. Just how long it will take before LANs are integrated at the application level remains uncertain, he adds.

In an effort to speed network-based applications, 24 corporate users with a collective installed base of some 2,500 servers and 75,000 network nodes recently formed the Network Application Consortium.

• **Security fears.** Meanwhile, most users remain wary of placing traditional mainframe-generated applications on the network, even in environments where it is possible to do so today. And rightly so, according to Janet Hyland, director of net-

work strategy research at Forrester Research, Inc. in Cambridge, Mass.

Built segment by segment around fairly rudimentary bridge and router technology, many of today's internetworks are "nowhere near as secure as they should be, nowhere near as managed as they should be and nowhere near as reliable as they should be," Hyland says.

"They are pretty flimsy and precarious — especially for individuals used to IBM mainframes, SNA networks and a hierarchical controlled environment," she adds. "To them, this stuff looks pretty green — pretty infantile, actually."

It should come as no surprise, then, that most IBM Systems Network Architecture (SNA) networks continue to operate separately, even at sites where long-term integration plans have been developed.

Here, a notable exception is The Travelers Corp. The Harford, Conn.-based insurance company said it intends to run SNA traffic as just another protocol on the corporatewide LAN it is implementing.

"The $64,000 question," Hyland says, "is will SNA change enough to carry LAN-to-LAN traffic, or will SNA traffic get integrated into LAN internetworks now being created?"

"Right now, most users can't accept that SNA will be linked in," says Harout Burger, president of Electronic Data Systems Corp.'s technical infrastructure services, "but there's no question that folding in will come."

• **Lack of network management tools.** A big question mark is how tomor-

row's integrated data highways will be managed. Despite claims to the contrary, users, analysts and systems integrators agree that no one network management system on the market can adequately monitor traffic, diagnose problems, connect errors and/or reconfigure around downed network nodes.

"Network management becomes real fierce in an integrated environment," says Joe Horvath, director of information management at Honeywell, Inc.'s homes and buildings business in Golden Valley, Minn.

Now that the company has tied together various departmental LANs and subnetworks over a facilitywide backbone, Horvath says, it is enlisting help from vendors for network management.

"No one vendor does it all today. We will probably wind up with two or three network management systems, which will have to talk to one another," he adds.

• **Politics.** "Organizational politics is a big problem, and in some cases, it's worse than the technical problems," says Jim Kennedy, vice president at the information industry practice of Booz, Allen & Hamilton in Washington, D.C.

"Typically, a department based puts in a LAN for his own department's needs. Then, because there is not good management and control capabilities, there's no good way to determine where a problem is. What results is finger pointing."

A chief information officer who has authority over standards goes a long way toward minimizing such problems, consultants, users and vendors agree. ■

PATHWAYS
Do it yourself or order out?

BY JULIA KING
SPECIAL TO CW

So you've decided that the payoffs from better integrating your organization's local-area networks outweigh the possible headaches. Now you're ready for the next big question: Who's going to actually do the work?

The decision about whether to tackle LAN integration yourself or seek out one of several sources of outside help is one of the most important choices an information systems organization can make, according to veteran users and consultants.

Choices range from hardware and communications vendors to commercial systems integrators to specialized network integrators to regional integrators and event-retailers.

Often, where a company buys its LAN hardware and software depends on the size of the organization. Large companies with offices scattered across the country tend to buy from suppliers with a national presence, most notably systems vendors.

If these firms are also looking for integration services, they often turn to the largest commercial integrators, such as Electronic Data Systems Corp. in Dallas and El Segundo, Calif.-based Computer Sciences Corp.

Although major integrators are not specialists in the LAN integration market per se, industry experts say their strength is in managing large-scale projects in the hundreds of millions of dollars range. Giant firms often subcontract out the LAN portion to smaller specialists.

Other consultants note that large commercial integrators offer an advantage over vendors such as IBM or AT&T because they are not likely to be as closely wedded to any one product line, although strong vendor alliances often do exist.

Other equipment and service options are value-added resellers such as Network Management, Inc. in Fairfax, Va., and Evernet Systems, Inc. in Los Angeles, which specialize in LANs and LAN/wide-area network integration but whose national presence is uneven.

A third choice is a partnership of local integrators, such as US Connect, which serves national accounts through a referral system. Recently, US Connect teamed up with Bell Atlantic Corp. to offer one-stop shopping for hardware, software and WAN transmission services.

Retailers such as Computerland Corp. and Businessland, Inc.

offer yet another choice. But many corporate users seem to regard these outlets as having too little network expertise.

Businessland, for example, has had problems developing a nationwide support organization for LAN integration, says Jeff Kaplan, an analyst at The Ledgeway Group in Lexington, Mass. "There aren't a lot of people who know how to do this kind of integration."

Some IS shops simply don't trust any outsider with integrating their networks. "We do our own systems integration in our technical support department, and we're heavily invested in training our folks on staff," says John Cunella, an MIS director at American Sterilizer Co. whose staff includes two certified Novell, Inc. engineers.

Mike Kinney, a network planner at Pennsylvania Blue Shield, says he will look for and listen to advice anywhere he can get it. "But when it comes to developing communication schemes, benchmarks and testing, we do it internally," he says. •

Who you gonna call?
There's no shortage of help from LAN integrators, but each has its strengths and weaknesses

Suppliers	Strengths	Weaknesses
Systems vendors (IBM, DEC, etc.)	• Nationwide sales/service presence	• Prejudiced in favor of their own product lines — tendency to sell their own applications
Value-added resellers (NMI, Evernet, etc.)	• Network specialists	• Limited number of solutions • Uneven geographical coverage may be unacceptable to Fortune 500 users
Local reseller partnerships (US Connect)	• Emphasis on integrating LANs	• Tend to offer limited solutions • Uneven geographical coverage may be unacceptable to Fortune 500 users
National retailers (Businessland, Computerland, etc.)	• National presence • High-volume discounts	• Limited networking expertise • Better sales than service
Commercial systems integrators (EDS, CSC, Andersen, etc.)	• Experience and know-how in handling big integration projects • Strong in planning, analysis and software development, thanks to background in management consulting	• May have "mainframe mentality" — often subcontract out LAN portion of contracts • High-priced personnel • May not be into "lens and mean" paradigm that goes along with LANs
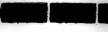
Source: CW Research

CW Chart, Denyse St. John

LANs help Allen-Bradley beat the clock

INTEGRATING LOCAL-AREA NETWORKS

Allen-Bradley

BY SUSAN R. NYKAMP
CW STAFF

Getting a product out the door fast is paramount in the electronics manufacturing industry. Milwaukee-based Allen-Bradley Co. is beating the time-to-market clock through aggressive integration of disparate work group local-area networks.

The company's Industrial Computer and Communications Group (ICCG) based in Highland Heights, Ohio, has linked heterogeneous LANs and tied them into a corporate mainframe to form an extensive computer-integrated manufacturing system.

"In this business, we have to introduce whole new generations of products every three years," says Joe Nemecek, the group's manager of technical computing services. A subsidiary of Rockwell International Corp., Allen-Bradley produces industrial control systems, including data acquisition, communications and quality management products.

The integrated network developed by ICCG encompasses Digital Equipment Corp. VMS systems, a variety of Unix workstations and DOS personal computers as well as Apple Computer, Inc. Macintoshes. That network ties into an IBM Enterprise System/9000 mainframe. The primary integration services are DEC's Network Applications Support software and IBM's Systems Network Architecture.

Making connections

The network of LANs connects about 1,100 users in engineering, manufacturing and information systems groups at five locations. Another 200 connect directly through the mainframe.

The integration process started in 1983, linking systems in engineering, technical writing and quality assurance. In 1986, manufacturing systems were added, and by 1990, systems in

marketing and customer support were integrated.

One result of the integration process has been a dramatic boost in manufacturing efficiency, according to company officials. For example, assembly time for printed circuit boards was cut from 15 days to three, and completion of engineering changes was cut from between one and three weeks to between two and three hours.

Interestingly, engineering and manufacturing — not IS —

Allen-Bradley's network links test systems with engineering and manufacturing to streamline product development

were the driving forces behind the LAN integration project.

"Engineering and manufacturing had the greatest need to integrate," explains Jeff Kent, manager of technical computing and design services. Since 1983, Kent's group has invested more than $1 million in the integration effort.

The need to expand the integration effort became clear last April when the ICCG disbanded its four separate product development groups and set up cross-

functional business and project teams.

"Users have demanded seamless integration," Kent says. "The integration effort was driven by the willingness of everyone involved to cooperate as a team. Otherwise, it wouldn't have worked."

Despite the large technical challenges, the main problems in the integration process have been those of data management. "We're struggling with how to control the distributed data and manage it," says Michael Krueger, manager of MIS.

So far, he says, the solution has been twofold: to establish logical areas of responsibility for managing information and to put together a set of procedures, standards and common formats.

Looking down the road, one goal is to develop a point-of-use inventory system made possible by the enterprisewide network. The ICCG also hopes to cut product time to market by another 33% and to expand the network to strategic global markets, according to Kent. That plan includes letting suppliers link into the network to access product design data.

According to Nemecek, "In this business, the winner is whoever can get the newest functionality to market first." •

checking stock," Furtch says.

The major problem was that the IBM 8100s were geared toward batch data entry and couldn't keep up with business growth, he explains.

Heavy use was also a factor. A total of 138 district managers, merchandising managers and sales staff members generated 5,000 to 9,000 transactions daily, including customer orders, inventory adjustments, debits, credits, invoice corrections and mill orders, Furtch says.

To handle the new system design, Crucible called in systems integrator ERI, Inc. The firm, a value-added reseller for AT&T and Novell, recommended building a web of personal computer-based LANs to handle independent processing at remote sites via an SNA link to the mainframe at headquarters.

Crucible also considered hardware and operating systems options, including Digital Equipment Corp.'s platforms and IBM's Application System/400, Furtch says, "but we decided we wouldn't gain anything by going to an unfamiliar operating system." Performance was the determining factor.

After rejecting 25-MHz IBM Personal Computer servers as too slow and also rejecting OS/2, Crucible chose 33-MHz AT&T Workgroup System PCs, also

dems and data circuits. "We liked the idea of having one supplier for the remote sites," Furtch says.

The next big decision was the choice of LAN operating system. The group looked at AT&T's Unix System V with LAN Manager and Novell's System Fault Tolerant Netware Version 2.15.

"We considered Unix be-

cause of its C base and because communications might be easier," Furtch says, "but we decided we wouldn't gain anything by going to an unfamiliar operating system." Performance was the determining factor.

"My philosophy is: 'Speed kills — your competition,'" Furtch explains. "We benchmarked both, and at the time,

Unix's response time just wasn't good enough."

For the WAN, studies by Crucible and ERI showed that SNA would be a better choice.

Implementation began Jan. 1, 1990. Crucible developed all applications and communications software and installed the equipment itself. "They wanted their people to know the network from the ground up," explains Jim Lahey, ERI field engineering supervisor.

All told, Crucible spent 1,200 hours in communications development and 2,000 hours on applications programming.

After nine months of developing and testing, the first installation took place in Rochester, N.Y. The largest site, in Chicago, received 21 PC workstations. The other sites received between three and 15 PCs.

LAN plan key

A key part of the LAN plan was to install and integrate the new system incrementally. "When you're rewriting everything, a mindset approach doesn't affect the business," Furtch says. During the process, the IBM 8100 network and the new system were bridged together.

One PC in each location handles communications, while the 8100 handles batch processing.

Keeping the 8100s lets Crucible stagger installation, training and testing.

Besides faster response time, the LAN-based system lets users call up customer sales history at local sites, improving customer service and planning. Users can now enter orders, check stock and track orders.

In addition, searches can now be done by customer, product name and part description.

Executives benefit, too, according to Furtch. A vice president of sales in Chicago now gets applications programs for inventory control and monitoring. "We can pass data to him through this system for his analytical work," Furtch says.

For now, ERI is handling upgrade questions and assisting in trouble-shooting. Eventually, a third-party maintenance firm will take over.

Mainframe databases are already being ported to the LAN, and the next step will be to tie in warehouse inventory systems.

"We like to control our own destiny," Furtch explains.

"With PCs, we can do that; we're not at the mercy of the suppliers. We can modify applications as we please." •

Francett is a free-lance writer based in Bloomfield, Conn.

Japan slow to follow path to promised LAN

COMPUTERWORLD JAPAN

TOKYO — The only hint of action in the young local-area networking world in Japan is in LAN integration, thanks to a wide variation in personal computers and software.

Most Japanese information systems departments look for a LAN vendor with a complete product line, including various connectivity tools such as routers and bridges, a backbone such as Fiber Distributed Data Interface and network management software. Most integrators help with design, consulting, service, maintenance and training.

The Japanese attitude contrasts with the attitude of many U.S. information systems departments, which often have the experience and expertise to choose, implement and integrate LAN systems themselves.

The low interest in LANs and LAN integration stems from the fact that most Japanese users and IS management personnel remain uninformed and unconvinced of the benefits of using LANs, industry observers say. The Japanese are thought to be three to five years behind the U.S. in their use of LANs.

The market research firm IDC Japan estimates that fewer than 2% of Japan's PCs and workstations are linked, compared with about 10% in the U.S.

Top Japanese LAN integrators include Software Research Associates, a well-known systems developer that specializes in Unix-based LANs, and Soliton Systems K.K., a joint venture with 3Com Corp.

Special software shortage

Multivendor connectivity is much more difficult in Japan for several reasons. Different protocols and machine codes require special software, and software engineers are in short supply. "Sneakernets" are still typical at many companies.

"Solutions here are very basic — just networking PCs to share resources such as printers and databases," says Martin Urbas, managing director of the computer systems international section at AT&T Japan.

According to Junichi Saeki at Dataquest Japan Ltd., the installed base of LANs is still small and limited to advanced technology users such as automobile manufacturers and remote users of supercomputers. "Many customers are happy with office systems and don't see a need to move to a LAN," he says.

There have been other impediments to the growth of local-area networking here. Some barriers have been the same ones U.S. companies face: upper management resistance to IS spending, IS departments wanting to maintain centralized control and unsophisticated users.

Even so, observers say, distributed processing and end-user electronic communications will eventually spread in Japan.

"Since Japanese organizations are often 'bottom-up' systems, distributed processing is well suited to this style," says Naoko Munakata, a deputy director at Japan's Ministry of International Trade and Industry.

"This year is the beginning for LANs in Japan. LAN engineers are still very few, as are applications. But in the next two or three years, the number of engineers and applications will increase," Saeki says.

TRW Environmental Safety Systems, Inc. in Fairfax, Va., has won a 10-year contract with the U.S. Department of Energy for systems engineering, development and management of a nuclear waste management system. The contract's value for the six months is about $16 million. The value for the remainder of the contract has not been determined.

Late-paying taxpayers may find the Internal Revenue Service in even hotter pursuit following the completion of a $340 million automated collection system by IBM's Federal Sector Division in Gaithersburg, Md. Working as subcontractors will be Andersen Consulting and Houston-based GC Services Corp., a systems integration and collections firm.

The National Cancer Institute awarded a five-year, $39 million contract to Lockheed Integration Solutions Co. in Sunnyvale, Calif. The institute's Advanced Scientific Computing Laboratory will be outfitted with an integrated, multivendor supercomputer system.

The New York City Department of Correction has named Digital Equipment Corp. a prime contractor to develop a system that will track telephone calls and commissary purchases made by 25,000 inmates in correction department facilities throughout the city's five boroughs. The five-year contract is worth $12.4 million. The system will combine VAX systems, networking software, telephones, private branch exchange switches, voice recognition and response units and custom software.

Federal courthouses nationwide will be able to communicate via a system of local-area networks connected to a wide-area network by a Netrix Corp. #1-ESS Integrated Switching System. Netrix procured the multimillion dollar, five-year project as a subcontractor to IBM.

The U.S. Army Communications-Electronics Command awarded Serv-Air, Inc. a $100 million contract to provide installation support services.

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TYING IT TOGETHER
Kim Myhre

Buyer beware

Computer and communications manufacturers now looking to customers for a new source of revenue: network integration products and services, including local-area network integration.

Their motivation is easy to understand: Vendors need to stabilize and/or supplement shrinking hardware margins.

They view network integration services as a "value add" that encourages vendor loyalty, generates incremental service revenue and creates opportunities for increased traditional product sales.

Unfortunately, few vendors claiming to be network integrators — including IBM — can currently provide complete connectivity and internetworking solutions.

The harsh reality is that many computer and communications vendors lack the resources, knowledge and experience to be full-scale network integrators.

Few vendors have the product portfolio needed to support complex technical requirements. Even fewer have the track record, project management skills and vertical industry expertise necessary to be true business solutions integrators.

As of these limitations were not enough, most computer and communications systems vendors have developed network integration strategies that focus on short-term sales and long-term customer account control. Less often do they reflect the actual requirements of their customers.

The general rule of thumb for integration projects undertaken by systems vendors is that 50% of the contract's value should represent off-the-shelf products, 25% should cover customized

software/hardware development and 25% should represent project management, technical consulting, training and support.

The bottom line is: Many computer and communications vendors are likely to short change their customers above your network integration needs.

Can't have just one

In fairness, many vendors do, in fact, have excellent *proprietary* networking capabilities. But the cold truth is that few customers' internetworking requirements fit within a single vendor's approach. Even the promise of "standards" dulls in the face of a protracted and high-price of individual development and deployment process.

So, it's fair to say that vendor claims of objectivity as network integrators are open to skepticism. By necessity, vendors must have a built-in bias toward their own products.

For example, while IBM will provide personal computer solutions, its financial objectives dictate that such solutions be designed to encourage larger systems sales. As an integrator, Apple Computer would probably prefer the opposite approach.

While the network integration business is very important to computer and communications systems vendors, they still need to learn a great deal to become effective service providers.

Some of these obstacles are technology- and product-related and will eventually fade. Other obstacles will require new and radical thinking about business partners and customers.

It sounds simple, but it's true: What makes sense for the vendor doesn't necessarily make sense for you — especially if you are working in a multivendor environment. This may be even more true in network integration.

For now, caveat emptor. ●

Myhre is senior vice president at International Data Corp. in Framingham, Mass.

F.Y.I.

Tools, money and technology are big concerns for managers contemplating the integration of separate information systems into an interoperable network.

Those are among the conclusions of a new study of 259 executives at Fortune 1,000 companies conducted by Business Research Group in Cambridge, Mass.

Asked to name the major problems in developing an interoperable network, 33% of the executives cited "lack of an effective network management tool," 30% cited the "high initial investment required," and 25% pointed to rapidly changing technology.

The two services most commonly shared now on a backbone network are central databases and electronic mail, 86% of the respondents reported.

Twenty-six percent of the respondents said that within two years their systems consolidation efforts will include simplifying data management, 22% said they will create common databases, and 20% said they will create a shared backbone network.

Teamwork takes work

Self-directed IS groups can collapse management layers and increase staff effectiveness, but they can also rock the boat if not eased in correctly

BY CAROL A. NORMAN
AND ROBERT A. ZAWACKI

Ask information systems managers whether they believe their organizations can have employee-to-supervisor ratios of 40 to 1, and chances are they'll say, "Impossible! Service quality will suffer! How can I have this ratio and add value to the business, which is what the CEO wants me to do?"

IS managers can have it all — quality service, added value and a leaner management layer — but it requires a management philosophy that encourages taking risks and empowering people as well as an organizational structure that puts that philosophy into practice.

IS groups in certain large companies are experimenting with the use of self-directed work groups, a team management approach that gives IS individuals the skills to handle change and make better business and technology decisions. Because they broaden their expertise, these IS individuals become more productive, motivated and satisfied with their jobs.

While still in pilot stages at most firms, self-directed work groups have the potential to improve IS effectiveness throughout a company. Because team members are expected to manage, evaluate and improve the group's work environment, IS staff members such as programmers and systems analysts learn skills that can ease interactions with business units and ensure effective system implementations.

For example, a systems analyst who has been trained in negotiation and conflict resolution would have not only the technical expertise to deliver a program but also the change management skills that are needed to make its implementation palatable to business users.

Who does what?

Unlike a traditional organizational setup in which a supervisor is the prime decision-maker, self-directed groups typically spread the decision-making among individual team members.

The IS manager of old becomes a team consultant or a team member, or he leaves the group or company (see story page 78). Manager attrition and turnover during the life of the work group account for much of the cuts in management salary overhead.

As a consultant, this person acts primarily as a group facilitator and team mentor as well as coordinator working with leaders in traditionally managed groups. For example, he may be called in by the group to give his opinion on a potential hire or advise a group member contemplating a move from maintenance into software development or a business unit.

The team then becomes responsible for scheduling work, vacation and leaves, negotiating task assignments, training, hiring replacements and appraising individuals' performance (see story page 78). Each team member is empowered to make commitments for which the entire team is accountable.

Less trial and error

For new IS staff members, the group can shorten the company policy and technology learning curve. A mentor can guide the new members through the intricacies of the organization as well as tell them who the IS experts are for questions on maintenance, networks and so on. There's less trial and error involved; the person becomes an effective part of the IS group more quickly.

Furthermore, broadening an IS individual's responsibilities fulfills his high need for achievement and enables him to value his work more. In fact, with the kinds of nontechnical decision-making skills developed in this participatory management setup, team members are likely candidates for leadership roles in traditionally managed groups.

Self-directed work groups are not the latest quick fix or *One Minute Manager*. They are usually part of a hybrid company — one in which the majority of groups (and thinking) are hierarchical. Many self-directed work groups take years to reach maturity, with only about 75% of pilot projects ever getting that far. Twenty-five percent fail or are on their way to failure because they lack the vision, planning and staff buy-in vital to their existence.

Fall short on any one of these elements and the consequences are not good. One IS self-directed work group pilot, for instance, had top management behind it and support from employees but no business unit acceptance. That work group is no longer functioning.

All involved in the project must understand that while the concept of self-directed

Norman is a productivity specialist in the customer support group at Digital Equipment Corp. in Colorado Springs and a member of a self-directed work group. Zawacki is a professor of management and international business at the University of Colorado in Colorado Springs.

Tips for teams

- Believe that people want and enjoy meaningful work and will work hard to accomplish worthwhile goals
- Continually measure individual and business unit satisfaction with the self-directed work group
- Provide timely feedback for the group and individuals
- Outline a clear career growth path for team members and those who choose not to participate
- Be prepared to be in it for the long haul; these groups take time to reach maturity
- Expect your training budget to double

From O'Neill

IS work/groups is attractive, it is not cost without costs. Expect, for example, to double your IS training budget in the first 12 to 18 months as team members come up to speed on the duties once relegated to the former group supervisor. Furthermore, the majority of these costs will not go to technological training but to "soft" management-type courses.

Hard to get used to

Self-directed work groups will also take their toll on employees. Some staff members will not get used to the fluid makeup of such groups and will quit or move on to more structured environments within the organization.

Getting self-directed work groups to work takes work.

IS managers and group consultants

must help employees understand that a self-directed work group is a risky proposition and that they may become frustrated. For those individuals unable to handle this pressure, IS must ensure the existence of "safety nets" — feedback mechanisms and clear career options — to make the risk less threatening.

Feedback is solicited from team members as well as the business organization at large. IS measures satisfaction with the work group through questionnaires in which work group individuals rate satisfaction with each other and their consultant (see story below).

Business units also get into the act by rating such service staples as reliability, responsiveness, competence, access, courtesy, communications, credibility, security and understanding of the business unit. These assessments happen through-

out the life of the self-directed work group — typically at inception, six months, 12 months, 18 months and so on.

IS group feedback is gathered at a group review process that occurs every 30 days. The group uses these review sessions to assess team effectiveness and job satisfaction. Individual performance appraisals and feedback happen on a yearly basis (see story bottom). If a performance improvement program is in place for an individual, feedback can occur every 60 days.

Career motivation

Along with feedback, a clear career path has been found to be a primary motivator for IS professionals. That's why organizations with self-directed IS work groups on their minds need to ensure they have a career track in place. Because the upshot of these groups is a reduction in management layers, the business management track may not be as viable an option as it once was. A technology track must exist that delineates the technical, business and management competencies needed to move from position to position in IS.

This track usually contains levels that are roughly comparable in salary and status to the traditional business management track.

When implemented correctly, self-directed work groups have tremendous potential. They can increase team productivity while increasing employee satisfaction and developing leadership skills; heighten technical preparedness for new products, services and business; increase IS service quality to business units; treat team members as major contributors in the process; and develop a successful self-directed work group mod-

Self-directed leadership

I n a traditional hierarchical IS department, managers are managers. They set goals and deadlines and give feedback to employees. In a self-directed work group, the leader's role evolves into that of counselor and consultant to the group.

"Egoless" leaders — ones who get their feelings of self worth not only from getting IS projects out the door but also from watching people develop into well-rounded individuals — make this change with minimal strain. They are able to hand job control to team members.

Not all traditional managers will be able to make this shift, however.

Leaders whose overriding motivators remain personal advancement and recognition either move into the hierarchical structures of other IS groups or leave.

Companies must provide career options to keep valuable employees for whom the work group option doesn't work. Taking a 'do this or die' controlling attitude will only serve to alienate prospective work group converts.

el that can be applied to other aspects of the business.

These are benefits your chief executive officer can relate to. ◆

For good measure

Measuring satisfaction throughout the life of a self-directed work group provides an important gauge from which IS proponents can judge the health of the pilot group — and the company's perception of it.

The following are sample statements from questionnaires sent to work group participants and business units. Respondents' answers are based on a scale of 1 to 7, where 7 is the highest rating:

- **Business unit access to the IS team**

There is access to someone in IS to solve technical problems

There is realistic response by IS to our business needs

- **Individual satisfaction with the team**

My job requires a lot of cooperation with other people on the team

Coach and co-workers on this job almost never give feedback about how well I am doing in my work

- **Individual's satisfaction with team consultant**

The degree of respect and fair treatment I receive from the consultant

The amount of support and guidance I receive from the consultant

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Breaking appraisal tradition

Self-directed work groups take committee approach to reviews

BY ROBERT A. ZAWACKI
AND CAROL A. NORMAN

O ne responsibility of self-directed work group members is to handle individual performance appraisals. While this is only one activity for the work group staff, it is indicative of the scope of skills each member of the group acquires.

We're all familiar with the traditional review — a once-per-year meeting with an information systems superior who tells you what he thinks of your performance. Often, you walk away feeling as if you've been judged in an ancient history or behavior you did not know was unacceptable.

The self-directed work group, on the other hand, takes a committee approach to performance appraisals that relies on peer ratings and self-review (see story right). This kind of review more accurately appraises an individual's performance throughout the year and helps set an agenda for an individual's growth.

The effect these committee appraisals have on the individual is one of empowerment. The team member is involved in setting goals for himself and therefore feels in control of his career growth. Furthermore, as a member of the team, he can integrate his goals with team and organizational objectives, thus strengthening the entire company.

This process does have its drawbacks, however: the primary one being that it is

time-consuming. Each team member needs to provide input into each performance evaluation on the team; if there are 40 team members spending an hour each on an evaluation, the process can take up to 40 team-hours in input alone.

It's also not uncommon for team members to feel uncomfortable writing their own appraisals, never mind being wary about rating their peers. This wariness may be well-founded because individuals are sometimes too lenient or too harsh in appraising others, especially if they have

not been trained properly in the process.

Because of the free exchange of information that occurs, a poorly trained team can face peer disputes and competition. Its mandate, however, is to work out problems, going to the counselor only to break an impasse.

Yet the benefits outweigh — and even cancel out — the drawbacks a team can encounter.

The process is time-consuming, yes, but it taps the whole team as a source of performance appraisal instead of relying on one supervisor's perception of an individual's work. Therefore, the consultant (former supervisor) is free to

spend more time mentoring team members and formulating team direction.

Because the performance appraisal comes from people who have worked closely with the individual, it is a more accurate judge of his talents and weaknesses. Trading time in return for a more effective evaluation is a trade-off many employees will make.

In fact, even though they take time to complete, performance appraisals are seldom late because the responsibility for completing the appraisal is on the individual's shoulders.

His own review will be based in part on contributions to the group. ◆

Performance review

The information systems performance appraisal process proceeds as follows:

- **Job document** is in place. A performance appraisal begins with a document put together by the work group that clearly outlines job descriptions, group expectations for individual behavior and requirements.

Requirements are used to stratify activities that demonstrate job success, the criteria by which the group gauges employee performance. This ensures that the measurement of an employee's performance is rooted in job content.

- **First action.** The IS group administrative assistant notifies the individual about the review by committee approxi-

imately 30 days before it occurs. The individual chooses a performance evaluation chairman, someone who is an advocate of the person's work.

- **To committee.** The review committee typically consists of the person to be reviewed, the performance evaluation chairman, the group's management consultant and at least two other randomly selected team members.

- **Group input.** The individual outlines for his IS team his accomplishments and training during the past year. Team members base their performance evaluation input on this information. The committee chairman collects comments and feedback from the group

over two weeks. The individual receives and reviews a copy of the appraisal.

- **Self evaluation.** Based on this feedback, the individual writes his own performance evaluation, which committee members review.

- **Discussions.** The committee meets with the individual to discuss the performance evaluation.

- **Summary.** The chairman writes a summary of the meeting, including any promotion or raise, if applicable. The completed evaluation document is signed and sent to human resources.

- **Goal setting.** The committee and individual formulate a development plan and job plan for the coming year.

COMPUTER INDUSTRY

Relax, be happy

► IBM said last week that it was enhancing alternative work arrangements for employees. Employees will be able to receive full benefits for three years while working 20-30 hours per week, and they will now be able to work part-time beyond the previous three-year limit. A work-at-home program for part-time employees who cannot report to their normal locations was previously tested on a pilot basis at 13 locations and will be expanded nationwide.

Prime disclosure

► DR Holdings recently filed its annual report on Form 10-K for the fiscal year ended Dec. 31, 1990, including Prime Computer, Inc. had a net loss of $135,418 for 1990, compared with a net loss of $276,758 in 1989. Prime also showed an operating income of $82,234, up from a loss of $94,716 in '89.

Sequent squeeze

► Sequent Computer Systems, Inc. said last week that it will report a loss for the quarter ending March 29. Citing the slumping economy and the Persian Gulf war, company President Scott Gibson indicated the number of prospects for its high-end on-line transaction processing systems has been high, but "getting the business closed in this period of economic uncertainty has been a major challenge."

Ross cashing in

► Ross Systems, Inc. said it has filed a statement with the Securities and Exchange Commission for an initial public offering of stock. The company said it anticipates a price of $8 to $9.50 per share. The company supplies applications software and services to users of Digital Equipment Corp. computers.

Tektronix hunt

► As part of a corporate realignment, Tektronix, Inc. said it has formed a Computer Graphics Group comprising its network displays, graphics terminals and color printers groups. It expects to name an outsider to the post of vice president in charge of the group within two weeks. The company also groups various lines of business into the test and measurement group and the television systems group.

Firms save every drop of water — or else

BY JIM NASH
CW STAFF

If raindrops were bytes, you would not need a calculator's memory to store what has fallen throughout California in the past five years.

Despite last week's rains, at the drought-parched region's companies the topic of water — how to save it, where to find it, how to replace it — is quickly rising from maintenance shop discussions to boardroom debates.

Nowhere are the issues more pressing than among the California computer firms that have replaced environmentally suspect chemical-based manufacturing cleansers with water-based alternatives — and, ironically, are now being clobbered by the environment they acted to preserve.

Semiconductor and chip makers are re-using purified production water in the cooling towers of their heating and air-conditioning systems. Other firms are going further, institutionalizing conservation. One company has even appointed a "water czar."

"We've done everything we could with the toilets, water use and everything else," said Mike Johnson, facilities manager at Hewlett-Packard Co.'s 26-acre complex in Palo Alto, Calif. "We even looked at the way janitors mop floors. In the past, one janitor was responsible for cleaning a whole building section. Now we team up janitors." The change, he said, saves HP 1,000 gallons of water per week.

Sony Engineering and Manufacturing Company of America in San Diego also took Mother Nature's hint. "We've been working on this issue for two years," said Clint Michaelis, Sony's executive vice president. Sony expects to bring a water-recycling plant on-line this spring as part of a $3 million to $4 million capital investment program aimed at conservation, he said.

Hoping to recycle 10% to 25% of the 800,000 gallons Sony uses each day at its picture tube manufacturing plant, the

Infrared photo of HP's campus shows which spots need water.

company has given an employee the dry tongue-in-cheek title of water czar. Michaelis said the czar's conservation task, however, is very serious: San Diego is

IRS accuses Fujitsu units of tax fraud

BY LORI VALIGRA
IDG NEWS SERVICE

TOKYO — The Internal Revenue Service has slapped a $64.1 million-dollar penalty tax on two U.S. subsidiaries of major Japanese mainframe maker Fujitsu Ltd., alleging they evaded taxes.

Fujitsu filed a protest in the U.S. Tax Court. "Fujitsu disputes the ruling and feels it is fairly setting the transfer price for computers and semiconductors," company spokesman Mike Bierne said. The transfer

price is what one unit of Fujitsu charges another for a part or product. For example, the amount Fujitsu Microelectronics, Inc. or Fujitsu America, Inc., the two U.S. subsidiaries involved in the case, pay for products made by the parent company in Tokyo.

The IRS accused the two companies of falsifying income reports by paying unreasonably high prices for microchips from the parent, thus lowering their income. It also claimed that Fujitsu paid taxes on the items in Japan rather than

in the U.S.

Such cases are not unusual between the U.S. government and Japanese companies, Bierne said. They arise from differences between the U.S./Japan tax agreement, which was created to avoid double taxation. The agreement provided that if the tax is paid in Japan, it need not be paid in the U.S. and vice versa. Other major Japanese computer vendors have also been tapped in such cases.

Paid in Japan?

"The U.S. wants the tax paid there, but we feel we already paid it in Japan," Bierne said. "The charge regards

where the taxes should have been paid."

According to the IRS, Fujitsu America filed false returns by reporting a lower income. Accordingly to the U.S. tax authority, Fujitsu America owes $8.1 million in delinquent taxes in addition to another $19.7 million in late fees.

Fujitsu Microelectronics was accused of evading $14.4 million in taxes between 1980 and 1983. The IRS wants that amount plus a $21.9 million late fee, according to a Japanese press report confirmed by Fujitsu.

Bierne did not know whom the company would know the outcome of its appeal.

Valigra is the Tokyo bureau chief for the IDG News Service.

Yet another British invasion, telecommunications style

BY ELLIS BOOKER
CW STAFF

SAN JOSE, Calif. — A regulatory framework in the UK and the prospect of increased competition at home has prompted British Telecommunications PLC to begin an aggressive campaign for business in North America.

On March 31, British Tele-

communications' two U.S. subsidiaries — the packet network company BT Tymnet, Inc. and the network equipment unit British Telecom, Inc. — were consolidated into a single organization. Dubbed BT North America, the 1,700-employee operation has a single sales/marketing service and support organization based here.

BT officials said late last

month that it had always been their intention to merge the North American operations. But they also conceded that a prime cause for the reorganization, which began one year ago under the code name Sovereign, was the anticipated end of the two-company telecommunications infrastructure in the UK.

"This certainly was a factor," said Ron Bamberg, vice president of business development and planning at BT North America. "By definition, BT will face

more competition in the home market."

BT, he added, is certainly preparing to protect its domestic market, but it also recognized it needed to build a stronger global operation.

North America, with its massive market for service equipment and services, was a key component of the global expansion strategy, Bamberg said. The estimated market in North America for value-added net-

INTERNATIONAL BRIEFS

Sigma Unix R.I.P.

▶ The **Sigma** project, Japan's Unix-based answer to its shortage of computer programmers, is buckling under to international standards. According to a report in the Japanese business press, several participants in the project recently said it failed to attract widespread support in. Japan, even though some 200 companies, including **IBM Japan Ltd.** and major Japanese computer companies, are involved in the effort. Instead, members have been flocking to international Unix standards such as those proposed by X/Open Consortium Ltd., the Open Software Foundation and Unix International, Inc.

I can't get no . . .

▶ An annual territorywide survey of hardware vendor performance has shown that **Hong Kong** users' confidence in their suppliers has eroded for the second straight year. In addition to a broad-based concern about pricing issues, the **1990 Customer Satisfaction Survey** conducted by Hong Kong-based research firm **Graham Mead Associates** indicates that users are less than enthusiastic about the performance of the people who sell and service the vendors' products.

British

work services is $600 million to $700 million, which includes revenue from customer premises equipment, value-added network services, transmission and applications.

Larry Cynar, an analyst at Dataquest, Inc., a market research firm in San Jose, said he expected the change would have little impact on customers. "As a provider of public networks, you want to be transparent," he said. "Users shouldn't have to worry where the equipment is or who services it."

Competitive pressure on BT started in the mid-1980s. Soon after the U.S. dismantled the Bell System in 1984, deregulatory winds swept through England, eliminating the monopoly BT had enjoyed.

Unlike AT&T, which faced a multiplicity of competitors, competition for BT was introduced in the form of a single provider: Mercury Communications PLC. -

This duopoly of BT and Mercury was recently reviewed by the Office of Telecommunications (Oftel), the UK's analog to the Federal Communications Commission. Oftel's duopoly review, completed earlier this year, calls for effectively opening the market in the UK to domestic and foreign competition and gives BT more pricing flexibility.

The Tymnet packet data network, which was acquired from McDonnell Douglas Corp. in November 1989, was integrated with Managed Network Services, BT's domestic public network, last September. The resulting 4,500-node Tymnet Global Network offers protocol conversion, local-area network services, electronic data interchange and electronic messaging.

Trade groups lobby for chip pact

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The U.S. computer and semiconductor industries got their act together last October. Now they have taken it on the road to Capitol Hill, recently telling separate Senate and House panels why the U.S. should sign a new five-year semiconductor trade pact with Japan when the existing one expires in July.

The 1986 agreement with Japan has had limited success. While it largely ended Japanese dumping of semiconductors in the U.S., it failed by a wide margin in its goal to boost the foreign share of Japan's semiconductor market to 20%. Starting at a base of 8.5% in 1986, that share now stands at 13.5% with just four months remaining in the agreement.

What is our share?

The U.S. enjoys a 12.6% share of the Japanese market. One percentage point is worth $200 million in annual sales and more than 1,000 U.S. semiconductor jobs, according to the Semiconductor Industry Association (SIA).

Representatives of the SIA and the Computer Systems Policy Project (CSPP) told trade panels of the Senate Finance and House Foreign Affairs committees that despite the mixed results of the 1986 agreement with Japan, the U.S. should press for a new agreement, stretching out the 20% goal until the end of 1992.

A new five-year pact should also include a reduced role for the U.S. government in determining dumping violations but should add a fast-track procedure for responding to dumping allegations by U.S. industry, the groups said.

The groups have not said what target, if any, should replace the 20% figure in the agreement after December 1992. However, at a press briefing here recently, Wilfred Corrigan, chief executive at LSI Logic Corp., said foreign suppliers ought to have at least a 30% share of the Japanese market by 1996.

WE TOOK THE STRENGTHS OF UNIX.

Preserving the lifeblood of manufacturing

For Silicon Valley semiconductor companies, water is the lifeblood of the manufacturing process. This makes it hard to keep up a business-as-usual attitude as the region trudges through its fifth year of the worst drought in more than 10 decades.

The good news is that many of these firms have had water conservation policies in place for at least three years and claim to be ready for this year's mandatory water rationing program, which will cut back their water supply by as much as 35% in some cities.

The bad news is that many companies could face long-term cutbacks in new product developments to save water if the drought continues, according to experts.

"What is happening here is that companies that have been investing the capital for future products are now being cautious in their future plans and take into consideration that they may have to cut back on production due to the drought," said Gary Burke, president of the Santa Clara County Manufacturer's Group, a public policy association formed in 1978.

Avoiding extremes

Santa Clara-based Vitesse Semiconductor Corp., however, is one of many companies taking measures to prevent having to go to that extreme.

At Vitesse, water conservation efforts include investments in education and about $500,000 worth of new equipment so far, according to facilities manager Mark Beck.

"These rations don't take us by sur-

prise . . . I think we'll be able to meet the 35% reduction," Beck said, referring to the pending water rationing program that is expected to hit Santa Clara this spring.

Other semiconductor companies are also doing what they can to save water wherever possible.

For example, Intel Corp., also based in Santa Clara, has its own water treatment facility for recycling purposes. Water used in the chip manufacturing process is cleaned and reused in Intel's corporate air-conditioning cooling system in the corporate offices, a company spokesman said.

MAURA J. HARRINGTON

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Water

contemplating a mandatory 50% water rationing plan for this year.

In 1987, HP was using 55,000 gallons of water per day at its headquarters. Johnson said that amount had been reduced 32% by 1989. That year, executives received water-use reports daily. Satisfied that waste has been reduced to a practical minimum, reports are now issued monthly, he said.

Once-per-day monitoring is still in use at Unisys Corp.'s San Diego plant. The complex, according to John Boothman, semiconductor manufacturing and packaging site manager, uses 118 million gallons of water annually, 63% of which goes to wafer fabrication. Boothman said the facility is reclaiming 34 million gallons of water per year by pushing it through cooling towers after it has been used in water production.

Even combined with the 20 million gallons it is conserving at the spigot, Boothman said, Unisys is curbing consumption by 45%, 5% shy of the possible 50% ration. San Diego is considering fines that would double the cost of water used beyond the 50% limit the first month and triple it the second month of excess.

If rationing is instituted and Unisys cannot conserve the last 5%, Boothman said, it could mean $306,000 in fines the first month and $460,000 every month thereafter. Unisys could log a new round

SAN DIEGO IS considering fines that would double the cost of water used beyond the limit the first month and triple it in the second month of excess.

of savings if it builds a proposed wastewater purification facility — a multimillion-dollar investment, Boothman said.

Silicon Valley companies are debating whether to move their call for voluntary conservation of 25% up to a mandatory 35% restriction. In San Jose, IBM

opened a $5.7 million plant this month at its storage systems division designed to clean contaminated groundwater. It pumps from under its 550-acre campus. About half of that water will be used in cooling towers, evaporation or, after further treatment, in disk assembly manufacturing, said June Andersen, spokesman of environmental programs at IBM in San Jose.

The remainder, about 400,000 gallons per day, will be pumped back down to the aquifer, Andersen explained. The new plant gives an extra brunt to groundwater already being pumped and filtered to reduce the pollution caused years ago when IBM underground chemical vats leaked.

IBM expects its financial payback from the plant, Andersen said: "It's not supposed to be cost-effective."

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Thought-provoking greenery

The majority of high-tech California companies, particularly those in Silicon Valley, put most of their water into their grounds. IBM dries the fence here, using water for its plant and walnut orchards. The orchards, which are the third largest in the entire Santa Clara Valley, are watered enough to keep them alive, but not enough to allow them to bear fruit.

David McLeroy, president of Green Leaf Landscape Management, Inc., in San Jose, said many Silicon Valley companies take more than mere pride in their landscapes. "The main industry here is brain power, not manufacturing," McLeroy said. "Fly over the valley and you see buildings that house people, not machines, that are generating research and development and software."

He said many residents believe the creativity in Silicon Valley is in part attributable to the environment. San Jose notwithstanding, "the area would have a Los Angeles look without the greenery," McLeroy said.

Mike Johnson, facilities manager at Hewlett-Packard Co., agreed. True, he said, the 1,100 individually cared-for trees on HP property are valued at $1.3 million; but more importantly, landscaping "allows people the freedom to be creative and to think."

In October, HP and two other valley companies took to the skies in an effort to water-efficiently preserve at least part of their grounds. HP, Tandem Computers, Inc. and Measurex Corp. chartered a plane to take infrared photos of their campuses.

Johnson said HP overlaid the photos on a computer-aided design mockup that showed each shrub and tree on the company's property. Yellows of areas on the color photos indicated flora in need of more water; red areas indicated adequate moisture.

Using the photographics map, HP can give its grounds keepers care instructions for specific trees, Johnson said. The company uses an HP 1000 running third-party software to turn drip irrigation on and off remotely to each of its tree banks.

HP is now setting up its own weather station to measure temperature, humidity and wind speed to better coordinate watering. Below-ground water sensors are on order.

If worse comes to worst, he said, HP will maintain as many trees and shrubs as possible, letting the fewest number die. In the meantime, the computer maker is planning more drought-resistant greenery using indigenous plants. Either way, he said, "HP is not going to have a desert."

— JIM NASH

Managers must stay on their technical toes

Fast Track is a monthly column dedicated to answering questions on career directions.

BY ROBERT KLEVEN
SPECIAL TO CW

Q I have been in applications programming for 12 years and am now an information systems department officer at a company that employs approximately 600 IS people. In the past, success in this field has been measured by the number of people one manages or by one's breadth of experiences. Yet recent trends seem to indicate that managers have to become more specialized. Does this mean that to continue to succeed, I must become more technical?

S.K.
Rutherford, N.J.

A The answer is no. The industry is becoming more technical as the user community becomes more sophisticated and demanding. Rapidly changing technology will not make managers' jobs any easier. It will demand greater technical competence on their part. The positive aspect of this is that they will find themselves more employable and flexible in today's changing IS workplace.

Q I am an Air Force officer with an MBA and 10 years of military experience. Last year, I transferred into a job using minicomputers for flight simulation and developed an interest in a career in IS. I am now enrolled in a bachelor's program in computer science at a local college. If I leave the service, what would be the best way for me to enter IS?

T.L.
Benbrook, Texas

A Complete your BS degree and develop a resume that highlights your real-time programming experience. Then, apply to companies that can use your flight simulator experience or are in government systems product development. Don't resign from the service until you have tested the job market first because you probably will not be compensated at the level you have achieved as an officer with 10 years of service.

Q I have more than six years of experience in a very large IBM environment as a Cobol programmer/analyst with CICS and DB2 experience. I'd like to hear about the financial side of overseas contract assignments. Can it be a way to obtain more income?

Initials and town withheld

A The most promising area of opportunity right now is in the Middle East because of the postwar reconstruction. Final companies that will have a major role in rebuilding Kuwait. For example, Computer Sciences Corp. will be hiring contractors to rebuild the Kuwaiti government's IS infrastructure, and Andersen Consulting was a contract to restore facilities and systems at Kuwait Airways Corp. There are tax advantages to work in Kuwait — salaries are tax-free — but for more information, contact a certified public accountant.

Q I am a registered pharmacist looking to expand my career horizon. I worked five years at a retail pharmacy chain while I earned an MBA and then became a sales representative for a major pharmaceutical company. I am currently enrolled in a graduate computer and information science program. What would be some of the career options that would be available to me given my training and experience?

Initials and town withheld

A Finish your graduate program before attempting to secure very scarce entry-level positions in IS. Right now, a new grad in IS would be more economical to train than someone without a graduate's degree and who has been in the work force for more than five years. When you do complete your master's degree, target pharmaceutical or biotechnology firms.

Q I have been an independent consultant for the past three years. I currently bill about $100,000 per year. Can you enumerate the advantages and disadvantages of incorporation?

F.G.
Pineville, La.

A Upgrading to a corporation has the following disadvantages: There may be significant legal and other fees involved in formation; the corporation's activities are limited to those granted in its charter; it is subject to numerous regulations and requirements; it must secure permission from each state in which it wishes to operate; and its income is subject to two types of taxation rather than one. The major advantage of a corporation is legal liabilities addressed to the corporation itself rather than to its owners. And unlike a partnership, a corporation can raise capital from a large number of investors through issuing bonds and stock. For more information, however, contact a tax advisor.

Q What are the best steps to take to climb the IS ladder? Is specialization or diversification best?

Initials and town withheld

A First and foremost, become knowledgeable about the business of the organization. Understanding what the business needs of the enterprise are and having the visionary capabilities to understand how technology — whether it be personal computers, minicomputers, mainframes, languages or whatever else — can be applied to the advancement of the business shortens the time it takes to climb the rungs more rapidly than any other single factor.

Kleven is the founder of Robert Kleven & Co. in Lexington, Mass.

We welcome your questions. Send them to Cathy Duffy, Careers Fast Track, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Your initials and town will be printed unless you request otherwise.

FAST TRACK
CAREER ADVICE FOR THE '90s

Computerworld/CorpTech Career Index

More than one-third of small- and medium-sized technology firms involved in defense are expanding their workforce, based on a survey of 112 defense manufacturers

Overall employment trends

- Overall growth rate: 6.4%
- Foreign owned firms: 1.3%

Percentage of surveyed firms

- Growing at over 25%: 16.1%
- Growing at over 25%: 17%
- Stable: 33.7%
- Shrinking: 13.6%
- Business failures: .9%

Employment growth by region

- Southwest: 16%
- Eastern Great Lakes: 11.9%
- South Central U.S.: 9%
- Northwest U.S.: 8.6%
- Southeast: 5.1%
- New England: 3.4%
- New York Metro: 2.9%
- Mid-Atlantic: 1.4%
- North Central U.S.: 0%

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INDUSTRY CURRENTS

HEALTH CARE

1989 ■ Average salaries ■ 1990

	Programmer	Systems analyst	Systems and programming manager	CIO/vice president/ IS director
1989	$24,362	$40,077	$48,902	$81,175
1990	$25,889	$33,900	$51,667	$67,405

What are the most important positive aspects of your job?
(Top five responses)

Number of respondents*

1	Salary	19
2	Co-workers	16
3	Health insurance	16
4	Reputation of company	16
5	Opportunity for advancement	14

*Base of 33; multiple responses allowed

Source: *Computerworld* salary survey and job satisfaction survey

What are the biggest frustrations of working in health care IS?
(Top three responses)

Number of respondents*

1	Office politics	17
2	Poor communication with management	14
3	Salary	11

*Base of 33; multiple responses allowed

CW Chart: Darren St. John   Illustration: David Flaherty

Beta site trade-offs: There's no free lunch

Buyers enticed by the "free" fruit that comes with becoming a beta-test site may want to look carefully before taking a bite.

Essentially, a beta-test site works this way: A company contracts with a vendor to use the product (sometimes free of charge or at a discount) and provide feedback. The vendor may implement suggested changes and send them back for repeated review by the tester. When a product is tweaked to the point at which it can be released to the public, the tester receives the updated version and continues as a regular user.

At its best, beta testing products builds good relationships with vendors, which brings better service and support and increases an information systems organization's competitive advantage by being the only one using a particular beta-test product. In addition, beta testers can sometimes shape products to better suit their processing needs.

At its worst, beta testing can be a frustrating, time-consuming experience. Products may have problems, the test site may need to run duplicate systems, which is a costly undertaking, and nondisclosure agreements impose strict confidentiality orders on beta testers.

Shaping the future

Before organizations decide whether they want to become beta-test sites, they should analyze their reasons: If the primary goal is to get the latest and greatest software or hardware hassle-free (at least for a period of time), then an IS organization really shouldn't get involved. Beta testing requires a strong time commitment from the company.

For Giorgio Sorani, division head of MIS at Labrizal Corp., a chemical manufacturer in Wickliffe, Ohio, the reason to become a beta-test site was not only to develop good vendor relations but also to be able to play a part in shaping products to fit their needs. "It gave us the opportunity to shape the finished product and help define priorities for future enhancements," says Sorani, whose company became a

test site for Texas Instruments, Inc.'s Information Engineering Facility computer-aided software engineering tools.

Gaining a competitive edge by using software and hardware that hasn't yet become a commodity is also a popular reason among beta testers. Sorani says becoming a test site is one of the best possible ways to use emerging technologies and stay ahead of the competition.

One intangible reason to head down the beta-test road is that it can be a morale booster, according to Ted Dixon, vice president of information resources at Northeast Utilities in Berlin, Conn. He says his IS staff of over 400 gets a kick out of working on new products before they are announced. "They enjoy it, and we find it rewarding to have some influence in a product's development," he says. His company has beta-tested IBM's 3090 mainframe line along with other products from IBM and other vendors.

The downside to agreeing to be a beta-test site is that once you sign on, it's difficult to get out of an agreement. The time commitment can be very significant at times, but potential beta testers should be aware of this at

the beginning. When a software program doesn't work properly and the going gets tough, "they can't walk away. That's when the real work [in beta testing] begins," says Jeff Nepper, director of fair technology at Deloitte & Touche in Washington, D.C., whose company has been a beta-test site for Lotus Development Corp.'s 1-2-3 Release 3.0 as well as other spreadsheet and accounting programs.

Consequently, when things do go wrong, users just have to be ready. "Anything so beta is a time bomb waiting to go off," says John Dunkle, president of Workgroup Technologies, Inc., a Hampton, N.H.-based personal computer consulting firm. Dunkle's organization has beta-tested many PC software programs from developers including Microsoft Corp., Borland International, Inc., Adobe Systems, Inc. and others.

Two ways to thwart the havoc of program glitches is to save data to older program versions or test the product on duplicate systems. For example, some software programs enable users to save the data created by the beta-test program to an older, more stable version. Or as Dixon sug-

gests, test the product while running a complete duplicate of the data on more stable equipment to verify the differences in results between the old and new systems and ensure that at least one complete copy of the data survives.

However, this kind of testing hikes up the costs of being a beta-test site. "There are some expenses involved in testing in terms of both equipment and people," Dixon says. "By running data in parallel, the costs of hardware, software maintenance and staff is nearly double what it would cost to run the program after announcement."

Maintaining confidentiality is another beta-test hurdle to clear.

"Keeping your mouth shut is a major responsibility," Nepper says, because every beta tester is required to sign nondisclosure agreements. After more than two dozen experiences as a beta tester, Nepper says he has become adept at dealing with people who are interested in what he is testing. "You must make them understand that you can't break your disclosure agreement," he says.

Overall, beta testing works best when an IS organization is willing to commit to long hours and sacrifice some frustration in the name of progress, veteran testers say.

Buy/Sell/Lease

Graduates say IS programs need to get down and dirty

First part of a two-part series.

BY ALICE LAPLANTE
SPECIAL TO CW

Graduates of some of the country's most reputable information systems programs generally applaud the way their alma maters prepared them for jobs in corporate IS departments. But in the same breath, many say their education could have been even more valuable if they had been given more contact with the business world.

Specifically, graduates indicate that IS programs could be improved in three ways: They could offer more hands-on, systems-related jobs or internships; they could provide more technical training on a diverse range of hardware and software from a multitude of platforms and vendors; and they could teach how to solve business problems using IS.

Work experience essential

When Todd Knight attended the University of Texas at Austin in the mid-1980s, he realized his education was missing one major element: He wasn't gleaning practical experience in the IS field.

"I could see it was going to be tough getting out of school with the same degree as everyone else and finding a good job," Knight says. The University of Texas had no formal work-study program, so he officially dropped out of school every other semester to work so he could get hands-on experience.

Knight, who graduated with a bachelor's degree in data processing in 1987, is now a senior consultant at Ernst & Young in Houston.

Not everyone has it so hard. Elizabeth Goebbert, who received a bachelor's degree in data processing administration from the University of Georgia in 1989, was able to gain that leading edge in a work program while attending school. In her job at the IS department's high-technology laboratory, she did everything from configuring machines, adding circuit cards and upgrading processors to working with animation and presentation graphics software.

"I wouldn't have learned any of this in the core course work," says Goebbert, who is now IS administrator at the North Carolina National Bank in Charlotte.

Andrew DeMaio, who received his master's degree in IS in 1988 from New York University and is now a senior consultant at Booz, Allen & Hamilton, Inc. in New York, expresses the point best: "The world is not a Harvard Business School case study. There is absolutely no substitute for real-world experience."

Other recent graduates say their technical education — particularly advanced coding — was a high hurdle they hadn't quite cleared by the time they landed their first jobs.

"The biggest problem I've had in adjusting to my job was not getting enough technical skills in enough depth," says Tammie Fisher, an associate programmer/analyst at The Coca-Cola Co. in Atlanta. "You don't do a lot of it in college. You get a list of how to do it, but you don't really go into it." Fisher particularly would have liked to learn more about fourth-generation languages — something she didn't get while earning her bachelor's degree in MIS at the University of Georgia.

Goebbert stresses that the basic core classes at the University of Georgia were excellent, "but I think we needed to get more technical, get our hands dirtier," she says.

Some graduates even indicate

that they have yet to see the application of some of the more theoretical aspects of their course work in their current jobs.

This was the case for Chris Garner, who graduated last year with a master's degree in MIS from the University of California at Riverside. He already had a nontechnical job at GTE Corp. but wanted to move toward a more systems-oriented career path — a goal he accomplished halfway through his graduate work. Now a senior account executive at GTE, he says that while his education gave him a broad grounding in basic technical and business skills, "a lot of the more theoretical stuff didn't do a lot for me," Garner says. "To this day, I cannot see how I can apply some of the things taught in a database design class to my job."

Business savvy is another area that some graduates say can't be stressed enough in IS programs.

"It's important to understand all of MIS — from the coder all the way to the business analyst," says Kevin Fenn, a project manager at Battelle Pacific Northwest Laboratories in Richland, Wash., who earned a master's degree in MIS at the University of Arizona in 1989. "You can be a fantastic programmer and not understand how to solve a routine business problem."

The program at the University of Arizona, Fenn says, allows students to pursue independent, business-oriented systems proj-

ects under the supervision of a faculty member who allows them to tailor the projects to meet their needs.

School can't do it all

Most IS graduates conclude that the most a good school can do is provide the basics. The rest is up to the student.

"You can't pack 10 years of experience into a 20-month program," says Donald Rylander, a programmer/analyst at Burlington Northern Railroad Co. in St. Paul, Minn., who received an MBA from the University of Minnesota last year.

Rylander says that although he had a lot of technical "catch-up" to do at his job, he had a good enough education to pick it up without any problems.

Cindy Butcher, a software application specialist at Hewlett-Packard Co. in Palo Alto, Calif., who received her master's degree in MIS from the University of Arizona in 1989, concurs.

"As the demands of your job increase, practical experience will be your best tool," she says. "But my education did provide a good IS foundation so that I could identify and pursue my interests in depth once I got out into the real world."

Part II will take a look at what IS executives say about the preparedness of graduates from top IS schools.

LaPlante is a free-lance writer based in Palo Alto, Calif.

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INDUSTRY ALMANAC

INVESTMENT OVERVIEW

You have heard it before: The domestic recession, coupled with the prospect of a softer European economy, makes for slim pickings in the stock market. Investors say their backs up, poking around for predictable companies likely to post positive financials this quarter.

So where should you look, and what is the near-term picture for the technology sectors? A round-up of recent brokerage firm reports provides guidance:

Software and services. First-quarter 1991 results will be the first test of both recessionary impact and the endurance of current inflated stock valuations, and Charles Frumberg, an analyst at Mabon, Nugent & Co. He predicts that business will not be as bad as some people fear. Yet shares have gushed so much lately that investors' tolerance for pain will drop — as will stock prices — on earnings news even the slightest bit disappointing. Frumberg calls Electronic Data Systems Corp. and Legent Corp. attractive.

Large systems. Smart investors will watch vendor product cycles to steer buying trends rather than try to outfox macroeconomic conditions, S. G. Warburg analyst David Wu said. Big corporate buyers are between mainframes right now, waiting since fall 1990 for announcements of next-generation computers to become reality. With IBM and Amdahl Corp. plan to ship their new mainframes late this year or early in 1992. This should kick life into profits at both firms. Wu said, labeling IBM and Amdahl "buys."

IBM's warning two weeks ago of weak first-quarter 1991 earnings took a heavy toll on its share price, however, and prompted some analysts to downgrade ratings. Prudential Securities, Inc. now rates IBM a "sell," citing weak equipment sales in all product lines except the RISC System/6000 workstations.

Service sales at Digital Equipment Corp. should grow in the current quarter, according to Laura Conigliaro, an analyst at Prudential Securities. Her advice: Buy DEC now. An upswing in service revenue combined with DEC's cost controls and work-force reductions can potentially offset uncertainties in its hardware sales, driving up its share price.

Small systems. Analyst Andrew Neff at Bear Stearns & Co. predicts that revenue in the personal computer sector will spurt between 5% and 15%, fed mainly by new product cycles in major firms, such as Compaq Computer Corp., Apple Computer, Inc. and AST Research, Inc. Notebooks and laptops are hot, Neff noted, and Compaq dominates that market. AST recently announced volume production of its notebook, and Neff said he expects a notebook machine from Apple this year.

The desktop segment stands to reap rewards from the downsizing seeds sown by many user companies, Wu said. Along with Apple, Silicon Graphics, Inc. is a worthy long-term investment because it caters to two fast-expanding markets: three-dimensional color graphics and affordable high-performance workstations.

However, said Sun Microsystems, Inc., he advises. Strong momentum from IBM's RS/6000 and Hewlett-Packard Co.'s new workstations will probably bite into Sun's profits in 1992, slowing its growth to somewhat less than the 20% projected for the workstation industry.

KIM S. NASH

STOCK TRADING INDEX

THIS WEEK'S HIGHLIGHTS

● AT&T gained ⅜ a point last week to close Thursday at 34¾, while NCR Corp. gained 1⅝ points to 99¾. NCR's annual meeting revealed that AT&T has gathered enough NCR shareholder proxies to replace four people on NCR's board.

● Software makers blossomed during the first week of spring. Microsoft Corp., which some analysts consider a safe harbor during uncertain earnings times, rocketed 11¼ points to 106¾. Borland International, Inc., which Shearson Lehman Brothers, Inc. calls a good long-term buy, gained 7¾ points to 58, topping its 52-week high.

● After rolling out a new laptop computer, IBM regained 2 of the 16¾ points it recently lost, closing Thursday at 113¾. Hewlett-Packard Co. climbed 4⅜ points to 50 after introducing a new workstation line.

● Compaq Computer Corp. picked up 1½ points to 62⅜, while possible merger partner Silicon Graphics, Inc. [CW, March 11] slipped ⅜ of a point to 39¾.

Computerworld Stock Trading Summary

CLOSING PRICES THURSDAY, MARCH 28, 1991

Oracle rewrites financial plan

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Oracle Corp. has a brand-new chief financial officer (CFO) — and there is a whole stack of financial problems waiting for him.

The appointment of Jeffrey Henley, former CFO of Pacific Holding Company in Los Angeles, to executive vice president and CFO came on the heels of a quarterly financial report last week indicating the following:

• Oracle has increased its bad debt reserve by $42 million, after finding millions of dollars in uncollectable bills; $7 million of that was charged against third-

quarter earnings.

• Oracle has violated its loan covenants with a syndicate of 13 international banks that extended a $250 million line of credit to Oracle last summer. Oracle is prepared to renegotiate its loans with the banks, possibly paying a monetary penalty, Oracle USA President Michael Fields said.

• Oracle has decided to restate previous financial reports in accordance with new software revenue recognition guidelines from the American Institute of Certified Public Accountants. Henley said an initial review of Oracle's financial status revealed a lot of challenges — but none that are insurmountable. "I think the

groundwork to improve the company's financial controls is in place," Henley told a group of financial analysts here last week, "and I have seen nothing so far that makes me feel I've made the wrong [job] decision."

Skeptics on turnaround

Analysts at the meeting said they were unconvinced that Oracle has turned the corner on its financial downturn, which began last fall when the 13-year-old firm posted its first loss — a $36 million bombshell that drove Oracle stock down more than 50%.

Longtime Oracle observers were also skeptical. "I find contradictions in what they said that

were very disturbing, actually," said David McGoveran, president of Alternative Technologies, Inc., a database consulting firm in Boulder Creek, Calif. "Many of us who have had direct experience with Oracle's business practices over the years feel there's a lot of sidestepping around the basic issues that face this company."

The flawed accounts receivable bookings were blamed on duplicate billing and data processing errors in the Oracle sales divisions. Fields said a new Oracle Financials accounting system had been put into place recently, replacing homegrown software running on a minicomputer.

Henley, 46, was formerly CFO at Saga Corp., a large food service and institutional catering firm. He replaces Jeffrey Walker,

who was Oracle's CFO for the past five years and who will now run Oracle's applications software business.

Oracle held revenue steady at $269 million, the same as in the second quarter, and showed a nine-cent-per-share profit. Profits were $12.1 million, an improvement from just $6.7 million in profits last quarter [CW, Jan. 7], but were down significantly from the $24.3 million reported for the third quarter one year ago. The company emphasized that it showed a positive cash flow of $24 million after two quarters of negative cash flow.

Oracle recently reduced its $168 million debt by $15 million, company spokesmen said. Arthur Andersen & Co. is going over the firm's books and advising management on changes.

Constitutional scholar calls for 'high-tech' amendment

BY JAMES DALY
CW STAFF

BURLINGAME, Calif. — One of the country's leading constitutional scholars called for a 27th Amendment last week to ensure that individual rights of privacy are offered adequate protection in the Electronic Age.

Laurence Tribe, professor of constitutional law at Harvard University, said his proposal would allow computer users to communicate freely and would ensure that the freedom of expression rights enjoyed by the print and broadcast media apply to the digital community.

"Constitutional principles should not vary with accidents of technology," Tribe said at the First Conference on Computers, Freedom & Privacy, a four-day

symposium sponsored by the Computer Professionals for Social Responsibility. He said the amendment is needed because "the Constitution's architecture can too easily come to seem quaint-ly-irrelevant or at least impossible to take seriously in the world as reconstituted by the microchip."

The advent of electronic mail and bulletin boards has focused attention on the need to find a balance between computer security and civil rights. Tribe's proposition targets the electronic landscape where E-mail messages are stored and telephone conversations happen.

Although constitutional amendments are traditionally a tough sell — the last one occurred 20 years ago when 18-year-olds were given the right to

The Bill of Bytes
This proposed 27th Amendment would extend constitutional protections to the information world

> "This Constitution's protections ... shall be construed as fully applicable without regard to the technological method or medium through which information content is generated, stored, altered, transmitted, or controlled."

vote — Tribe said his proposal would serve as an important "genesis for discussion."

The amendment states that the constitutional protections "shall be construed as fully applicable without regard to the technological method or medium through which information content is generated, stored, al-

tered, transmitted or controlled."

Security officials maintain that legislation already exists to serve the electronic landscape. "We've got plenty of laws and a very orderly process of bringing law and order to the electronic community," said Donn Parker, a security consultant at SRI In-

ternational, a consulting firm in Menlo Park, Calif.

Lawyers such as Mark Rasch, who prosecuted computer hacker Robert T. Morris for releasing the virus that crippled the Internet network several years ago, also said the Constitution protects civil liberties.

Tribe contended, however, that recent court decisions "have revealed a curious judicial blindness, as if the Constitution had to be reinvented with the birth of each technology."

A series of events in recent years have raised charges from civil liberties groups that the government is playing fast and loose with the rules. Austin, Texas-based Steve Jackson Games was put on the verge of bankruptcy after U.S. Secret Service officials raided its offices one year ago and seized computers and documents they said contained "a handbook of computer crime." The documents were later discovered to be a fantasy role-playing game.

NCR

that it would accept $110 per share, more than AT&T's current $90-per-share initial offer and the $100-per-share sweetener it offered investors if it received the 80% vote it needed to oust NCR's board of directors at a special meeting of NCR shareholders on Thursday. AT&T promptly rejected the offer, saying it would not bid against itself.

Robert Kavner, head of AT&T's Computer Systems Division, said he was "encouraged" by what he called NCR's "new attitude." Kavner did not seem confident of a rapidly negotiated deal but said that "after a four-month drought, you look at a glass of water and you want to start swimming."

An unexpectedly low vote at the special meeting could help NCR extract a higher price from

AT&T. As Exley put it, "it's important for our side that it be as low a figure [as possible]." But the sources close to AT&T said AT&T was "heartened" by the vote because it appeared that some 20% of NCR's shareholders did not vote, and AT&T looks to have won as much as 75% of the votes cast.

Exley, meanwhile, said during the regular meeting that he anticipated further discussions with AT&T but that no resolution was likely over the holiday weekend. He also reiterated that he does not think the two companies should merge.

Analysts said they expect AT&T will pursue the drawbridge chaos by coming up with a higher offer. While one institutional investor who asked not to be named said he thought $107.50 per share in stock would be the final price, analyst David J. Schofield at Chicago's Duff & Phelps Investment Research Co. disagreed.

"Somewhere between $100 and $105 is very fair," said Schofield, citing $112 as a best-case value for NCR shares two years from now.

AT&T stated throughout its pursuit of NCR that NCR management would have complete control over the merger terms. If this is the case, analysts agreed, NCR management must move quickly to fold AT&T's Computer Systems Division into

it to maintain the momentum of its Open, Cooperative Computing strategy, announced last September.

There is also some question as to what will remain of AT&T's Computer Systems Division. Kavner said more than 1,000 employees have left the firm. Bill O'Shea, the Computer Systems Division's vice president of systems marketing and development, said the division is losing people it wanted to keep.

Before the merger effort, observers generally believed NCR could pull off its open systems gamble. Today, most stick by their earlier statements.

"I still think the marriage will work, and it won't cause major hardships," said Bob Vautrain, an analyst at Indocorp/Gartner Group. "It's just a question of who gets laid off and where."

Midwest Bureau Chief Ellis Booker contributed to this report.

NCR
The Exley era
The last three years have been less financially for NCR after solid growth in 1986 and 1987

Year	Revenue	Percent change	Net income	Percent change
1990	$6.29B	6%	$369M	-10%
1989	$5.96B	-0.5%	$413M	-6%
1988	$5.99B	6%	$439M	21%
1987	$5.64B	14%	$419M	24%
1986	$4.88B	13%	$337M	7%

Source: NCR Corp.

CW Chart/Tom Monahan

NEWS SHORTS

Sun offers new RPC version

Sun Microsystems, Inc. has announced an operating system- and transport protocol-independent version of its remote procedure calls (RPC). The company said last week it is making the RPC source code available free of charge to systems vendors and developers over the Internet network. RPCs enable distributed applications processing across mixed-vendor networks. The new RPC, co-developed with AT&T, is said to allow applications to be insulated from the underlying network transport protocol. For example, applications written for Transmission Control Protocol/Internet Protocol can run over Open Systems Interconnect-based networks. The announcement complements moves by five vendors to lay out a blueprint for a distributed computing environment based on Sun's RPC (see story on page 55).

Prodigy users sue

Prodigy Services Co. was recently hit with a class-action suit that seeks damages and an injunction against the way the information service charges for electronic mail. The suit, filed by the law firm of Greenfield & Chimicles in Los Angeles County Superior Court, accuses Prodigy, which is jointly owned by Sears, Roebuck and Co. and IBM, of deceptive advertising and fraudulent conduct. "It's an old story from a tiny group that's angry at us for changing our prices," a Prodigy spokesman said.

Andersen plans utility system

Andersen Consulting and Texas Utilities Electric Co. said last week they will jointly develop an IBM DB2-based software system for power plants. The $15 million total plant solution project extends Andersen's existing software for utilities and will be the first commercially available DB2 software to integrate the maintenance, engineering and operations of a power plant, Andersen said. The system will be developed at Texas Utilities Electric's Comanche Peak nuclear power plant. Chicago-based Andersen will market the system as its modules are completed between now and 1992.

Novell claims copyright violations

Novell, Inc. filed seven copyright infringement lawsuits across the nation during the past month. A spokesman for the networking company, based in Provo, Utah, said the cases represent the largest single group of suits it has ever filed. The spokesman said the only thing the lawsuits have in common is that they all target the alleged pirating of Netware.

Bull reports 1990 loss

The board of directors of Compagnie des Machines Bull reported net consolidated losses of $1.24 billion for the company in 1990, and net operating losses were posted at $500 million. The figures are consistent with projections the company made last November, when it announced a 13-month restructuring program that would eliminate as many as 5,000 employees and close several plants both in the U.S. and in Europe. Groupe Bull maintains that it has already reduced the number of plants from 13 in 1989 to six today and that the number of distribution centers will be trimmed from nine to two by mid-1992.

Computerland buys Nynex chain

Nynex Business Information Systems Co., which has been looking to sell its personal computer reseller business since January, found a buyer last week in Computerland Corp. Nynex's corporate accounts are the true plum in this deal, analysts said, while its retail storefronts are the least attractive element. Nynex's retail business, formerly IBM's downtown centers, has been struggling, although a company official said the firm was profitable at the end of 1990. Dataquest, Inc. analyst Douglas Kass questioned the fit between the two firms, noting that Computerland and Nynex have stores practically on the same block in some areas. The planned transaction, still subject to company approval, should be completed by June 1.

Amdahl forges plan to take on AD/Cycle

BY ROSEMARY HAMILTON
CW STAFF

While most application development software providers are aligned with IBM's AD/Cycle, Amdahl Corp. declared last week that it has a better way.

With the official rollout of Huron, a mainframe-based development platform, Amdahl said it will provide a new approach and new technologies to solve the long-standing problem of application backlogs.

Also last week, the company introduced the 6390, an IBM 3390-like disk drive. The new models, which will begin shipping later this year, offer more capacity per unit, a smaller footprint and improvements in the data transfer rate and seek time over the IBM drive. Certain configurations will also be cheaper than the IBM models.

Industry analysts last week said Huron appears to be a solid product offering. However, they raised two concerns. First, Huron is a comprehensive development platform with its own repository, relational database management system, language and generator. Its price tag reflects all these features. Licenses run from $525,000 to $1.4 million, depending on CPU size. Some customers may be reluctant to lock into such a full-blown solution at that price from a single vendor, analysts said.

Second, Amdahl has positioned Huron as distinctly different from AD/Cycle, which could cause concerns for users who do not want to drift too far from the IBM world, analysts added.

"They are going to need a little more adherence to the IBM camp," said Aaron Zornes, a vice president at Meta Group, Inc. "Once you get into the software game, you have to play by certain rules."

Amdahl's official Huron introduction did not include an AD/Cycle compatibility statement. In a subsequent interview, Amdahl and not a mock-up, Amdahl claims users could immediately switch it to production once it meets user requirements.

This method is a sharp contrast to the five-step life-cycle methodology on which IBM's AD/Cycle is based. IBM's philosophy emphasizes the up-front work on software development and calls for modeling and designing software applications before actual code is written.

Huron's packaging is also unlike most offerings in the AD/Cycle world. While most AD/Cycle players have zeroed in on key functions, Amdahl is offering a soup-to-nuts alternative.

Disk spin
Amdahl's latest high-capacity storage system, expected to be released during the third quarter, is reportedly faster and features greater capacity than IBM's 3390

	IBM 3390	amdahl 6390
Data transfer rate	4.2M byte/sec.	4.5M byte/sec.
Capacity	22.7G bytes	30.24G bytes
Average seek time	12.5 msec	10.7 msec
Platter size	10.5 in.	9 in.
Price for 60G bytes of storage	$772,350	$744,350

CW Chart: Darnell M. Saint

dahl President Joseph Zemke stressed the differences between Huron and AD/Cycle but added that Huron would eventually "interface into it."

"It's like having a train and a plane," Zemke said. "Both move people, but in a different way. We don't disregard the five phases [of the IBM development life cycle]; we just say you can move through it a lot more quickly."

Huron is based on a prototyping technique that would allow users to quickly write an on-line application prototype. Programmers would then consult with users and modify the code as needed. Since the prototype is on-line

The Metastor repository will contain all master data about applications. The RDBMS has extensions that provide for hierarchical data management. The high-level language can be used both to write applications and to access data. The generator will produce Huron code that can access data in either the Huron database or existing DBMSs such as IBM's IMS and DB2.

"What they've done is woven together some old ideas and new concepts," said Frank Gens, a vice president at Technology Investment Strategies Corp. in Framingham, Mass. "It has the potential to be a very strong product."

Sybase acquires Canadian CASE firm

BY JEAN S. BOZMAN
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. said last week it has acquired Deft, Inc., a $3 million Canadian computer-aided software engineering (CASE) tools firm.

Deft's CASE tools, based on the Apple Computer, Inc. Macintosh and targeted at relational database management systems running on Unix-based and Digital Equipment Corp. computers, are known for their strong reverse-engineering capabilities, industry analysts said.

"We have rounded out our tool set through our merger with Deft," said Bob Davoli, president of Sybase's SQL Solutions, Inc. a systems integration subsidiary. He added that sales of tools to end users accounted for one-third of Sybase's 1990 revenue.

SQL Solutions, which paid about $600,000 to license Deft products last year, uses Deft tools to craft applications that run against multiple RDBMSs. Among the target RDBMSs are those made by Sybase competitors Oracle Corp. and Informix Software, Inc., Davoli said. Deft's CASE designs also work with DEC's RDB relational database.

Deft founder and President Eric Goldman said his 2-year-old firm has sold 1,600 development licenses to 400 corporations worldwide. After the acquisition, he was named director of CASE engineering at Sybase. Most of Deft's 22 employees will remain in Rexdale, Ontario, while its sales and marketing units will be based at Sybase's headquarters here.

Until now, Deft tools only ran on the Macintosh, but versions expected within 18 months will run under Microsoft Corp.'s Windows 3.0 and IBM's OS/2.

David McGoveran, a partner at Database Associates, Inc., a San Francisco-based consulting group, said the Deft tools provide extensive diagramming and graphical design capabilities as well as powerful data dictionary features.

However, McGoveran noted that there was a "danger" in relying on re-engineering tools to convert RDBMS applications wholesale because the behavior of databases varies so much from vendor to vendor in terms of locking, scheduling and transaction management.

Spies

bankruptcy claim in 1985.

In 1987, federal bankruptcy Judge George Bason Jr. handed Inslaw a stunning victory, ruling that the Justice Department "took, converted, stole" Promis through "trickery, fraud and deceit" and then conspired to drive Inslaw out of business.

That ruling was upheld by the U.S. District Court in 1989. The Justice Department has since ap-

Edwin Meese III.

Inslaw alleges that Brian, Meese and another high-ranking Justice Department official conspired to appropriate Promis so it could be used in a "massive sweetheart contract" to install Promis throughout the Justice Department. It charges that the department continues to illegally use Promis, while it attempts to cover up its own wrongdoing.

In another affidavit filed by Inslaw last week, a scientist said he peddled Promis for use by the Royal Canadian Mounted Po-

> **I**T'S NOT LIKE these people would just come out of the woodwork and make these claims, considering all the trouble they could get in."
>
> CONGRESSIONAL SOURCE

pealed the finding to the U.S. Court of Appeals in a bid to overturn a judgment that it pay Inslaw $6.8 million in damages and $1.2 million in legal fees.

A congressional source knowledgeable about the Inslaw affair said judging the credibility involved is difficult. "When you're dealing with the fringes of the intelligence community, you can't just pick up the phone and confirm things. But it's not like these people would just come out of the woodwork and make these claims, considering all the trouble they could get in."

Ben-Menashe left the Israel Defense Forces in 1989 after a 12-year stint that concluded with a two-year job as intelligence consultant to Prime Minister Yitzhak Shamir. He was later indicted by the U.S. for attempting to sell transport planes to Iran but was acquitted. In another sworn affidavit filed earlier last month, Ben-Menashe said he attended a 1987 meeting in Tel Aviv at which American entrepreneur Earl W. Brian made a sales pitch for increased use of the stolen software by the Israel Defense Forces. Brian is a friend of former U.S. Attorney General

Former Attorney General Meese at central Inslaw charge

lice and the Canadian Security and Intelligence Service, where he said it is now installed.

The scientist, Michael J. Riconosciuto, said he got a copy of Promis in 1983 from Brian, who had obtained it from a Justice Department contracting officer.

Riconosciuto was research director at the time for a joint venture involving the Wackenhut Corp. and the Cabazon Band of Indians in California. The joint venture used the sovereign immunity protections of the Indian nation to shield it from view. Riconosciuto said, he said the venture used by Brian in a plot to sell the software illegally for use in "law enforcement and intelligence agencies worldwide."

A senior executive at Wackenhut, a private security firm and Justice Department contractor, said the company had entered into a joint venture with the Indians but did not staff it and folded it when it did not win any contracts. He said Riconosciuto had never been employed by Wackenhut and that the company knew nothing of Inslaw's software.

Response by the Canadian government to Inslaw's queries

Justice Dept. neglects security

GAO says lax security measures may have compromised confidentiality

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Sloppy controls on the way the U.S. Department of Justice disposes of used computer gear may have compromised secret investigations and endangered the lives of government agents and witnesses, government auditors have found.

Computer security experts said disposal of computers and magnetic media without first erasing software and data — the apparent problem at the Justice Department — is the Achilles' heel of many computer security programs in both the government and private sector.

An investigation by the U.S. General Accounting Office (GAO) was sparked by an incident last summer in which a U.S. Attorney's Office sold used hardware and magnetic tapes to a Kentucky broker for $45. It was later discovered that the equipment contained improperly

erased data on criminal investigations, secret informants and material sealed by court order. The gear was recovered, but it is not known whether any of the information was compromised.

Testifying before a congressional committee looking into the matter, GAO official Howard G. Rhile said a different U.S. Attorney's Office recently reported a similar incident.

"We found patterns of disposal and inattention nationwide that parallel the circumstances that allowed the Kentucky incident to occur — deficiencies that we pointed out to Justice in 1988 and 1989."

"I am disturbed by the findings," said Robert E. Wise Jr. (D-W.Va.), who requested the GAO probe. "We are spending billions of dollars each year to investigate and prosecute cases. It is money wasted if investigations are compromised because of security deficiencies, and irresponsible if people's lives are endangered."

He said Brian does not know McFarlane or Secord and has no ties to the intelligence community.

Inslaw Chairman and President William A. Hamilton said he did not know what hidden agendas, if any, Ben-Menashe, Riconosciuto and Babayan might have in making their charges. "They are probably not doing it out of altruism for Inslaw," he said.

However, Hamilton insisted that he had independent cor-

Harry H. Flickenger, an assistant attorney general, testified that the Justice Department has adequate policies for computer security but that it had insufficient staff for security compliance reviews. He said he was taking steps to correct that.

Disposal of equipment and media without scrubbing files is widespread, said Robert F. Campbell, a computer security expert and president of Woodbridge, Va.-based Advanced Information Management, Inc. "It's more common to allow this to happen than not to allow it to happen."

An even more common but equally risky practice is letting computers go out for repairs without removing or erasing magnetic media, Campbell said.

Donn Parker, a computer security expert at SRI International, said the risk in sending out computer gear is often overlooked. "It's serious enough to be on checklists of security controls. But I don't see it as a checklist item at the companies I visit."

roboration of most of the charges from other sources, some of whom have given evidence to a U.S. House of Representatives committee probing the matter.

Babayan worked on behalf of the Justice Department in a highly publicized "sting" operation against politicians in Miami during the 1980s. He is in a Florida jail serving time on security fraud violations. Riconosciuto could not be reached.

And justice for all

> **T**he Department [of Justice] has been found to be guilty of trickery, fraud and deceit, and that finding was affirmed on review by a highly respected judge," Elliot Richardson, an attorney representing Inslaw, told Computerworld last week. "We have evidence that wrongdoing by the department goes far beyond anything found already by the courts."

Richardson, a former U.S. attorney general who resigned rather than carry out President Richard Nixon's order to fire Watergate special prosecutor Archibald Cox, said Inslaw has interviewed 30 people claiming to have knowledge of Justice Department wrongdoing, but the department has ignored all but one of them in its own investigations. Richardson also said several requests made by him directly to Attorney General Richard Thornburgh requesting the appointment of an independent counsel to investigate the matter have gone unacknowledged.

Now, the House Judiciary Committee, led by Rep. Jack Brooks (D-Texas), is conducting an investigation. For more than a year, the Justice Department has refused to produce some 200 documents Brooks said he needs for the investigation, and sources said he may spark a Watergate-style constitutional confrontation by issuing a subpoena for them.

"The evidence we have so far doesn't add up to conclusive proof of wrongdoing, but it adds up to a duty to conduct a full, fair and impartial investigation," Richardson said.

TRENDS

DISK STORAGE

Despite sluggish growth in the computer
market, users are still buying higher capacity
and denser disk drives

Magnetic rigid disk drives
worldwide unit shipments
(in thousands)

3 1/2-in. disk drives lead the industry in unit shipments. Drives in the 30M- to 60M-byte range provide more than half of the 3 1/2-in. disk drive total. However, even large format drives show solid growth

1989	1990*	1991*	1992*	1993*

*Estimated

Flexible disk drives
worldwide unit shipments
(in thousands)

Microfloppy drives dominate the market, but smaller versions with heights of 3/4-in. or smaller will replace larger 1-in. configurations. By 1993, these newer versions will represent 71% of total worldwide shipments.

1989	1990*	1991*	1992*	1993*

*Estimated

Source: Disk/Trend, Inc., Mountain View, Calif.

CW Chart: Tom Monahan

N E X T   W E E K

I t's data center consoli-
dation time at GTE
Corp. Not only is IS at the
telecom giant integrating
equipment acquired from
its March 1-4 recent buy on
Contel Corp., but the firm
is also nearing the end of a
four-year effort to cut its
nine data centers to four.
The consolidation project
will save GTE $149 million
in labor and operating
costs, See In Depth.

L ike it or not, faxes are
becoming a major part
of the corporate informa-
tion flow. Manager's Jour-
nal examines the increas-
ing role that IS executives
should play in managing
fax expenses and integrat-
ing fax with other informa-
tion technologies. Many
firms are saving money
and gaining strategic bene-
fits from LAN-based fax
server applications.

INSIDE LINES

Sooner or later, it's got to emerge

Novell brought its System Fault Tolerance Level III product
up for air again at a developers conference last week. The firm
first announced development of the server-mirroring product
years ago. Development who witnessed the sighting said a sepa-
rate Ethernet cable was strung between two servers, which
were hooked up to three workstations on another Ethernet
cable.

Racal Data ready for bad news

The Racal Data companies have been rumored to be on the
brink of a major reorganization as fallout from the financial re-
sults of its March 30 fiscal year end. A spokeswoman for wide-
area networking company Racal-Milgo in Sunrise, Fla., con-
firmed that there are "anticipated changes early in the fiscal
year" that probably include staff reduction and a shuffling of
responsibilities of Racal executives at more than one of the
five U.S. Racal companies.

Anybody seen the IBM router?

Talk of a multiprotocol router coming out of IBM based on the
firm's RISC System/6000 workstation led to rumors last week
that WellFleet Communications was partnering on the project
and that The Travelers was actually beta-testing the product.
However, two Travelers information services executives de-
nied knowledge of the existence of the said router, although
they noted they are router shopping. A WellFleet spokeswom-
an insisted that "we have no agreement with IBM," and an
IBM spokesman would say only that "obviously, routing is a
key requirement that we haven't done a lot to address in our
product line. And we think routers are a good thing."

Another AD/Cycle 'event'?

IBM plans to color in more of its AD/Cycle picture with an
announcement tomorrow of additional business partners and
their products. One addition will likely be Intersolv, the new
entity based on the Index Technology and Sage Software
merger. Index had been one of the core AD/Cycle business
partners. A spokesman for Intersolv confirmed that the com-
pany would be represented at the briefing.

DEC and the 'vision thing'

The latest vendor "vision of the week" focuses on network
systems management and hails from DEC. Some industry ana-
lysts say they smell more marketing smoke than fiery prod-
ucts in this "major systems management announcement" DEC
has slated for this week. Yet others say they believe DEC will
unveil a new version of its Enterprise Management Architec-
ture, including a new VAX Performance Advisor that incorpo-
rates capacity planning and system performance monitoring
missing from the current release.

Apple's new monitor not for US

Apple insiders say CEO John Sculley has moved to improve
his rocky relations with third-party developers. Although Ap-
ple was planning to introduce a 21-in. color monitor this sum-
mer for about $4,000, the company realigned plans when Ap-
ple monitor makers such as Radius and Supermac Technology
began to kick. Sources say the monitor will still ship on sched-
ule but only outside the U.S.

HP in Posix catbird seat

Lynx Real-Time Systems will announce a pact this week to
license its LynxOS to HP. A Posix-compliant system, LynxOS
will be evaluated for potential use with HP's Precision Archi-
tecture RISC systems to address real-time and embedded ap-
plications.

*Laurence Walsh, the special prosecutor still investigating
the Iran/Contra scandal, has been mightily frustrated over
the prosecutions of Ollie North and his cohorts. In light of
our page 1 story this week, we can only hope he's not using the
Iran case-tracking software package to manage the inves-
tigation. Bring those darkest secrets to the attention of News
Editor Pete Bartolik, and we'll open them up to the light of
public scrutiny. Call (800) 343-6474, fax the next set of Penta-
gon Papers to (508) 875-8931, or bug us on Compuserve at
76537,2413.*